OIL AND GAS

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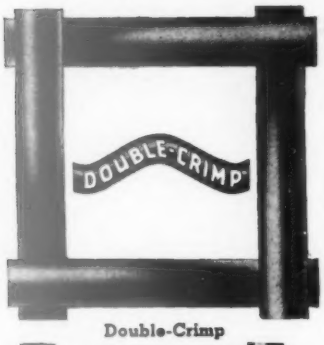
FEBRUARY, 1944

FOR 27 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

MAR 17 1944



Double-Crimp

"The Perfect"

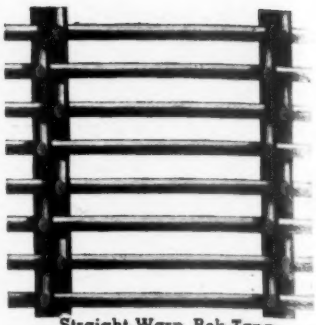
Wire Cloths and Screens

of

SUPER-LOY
STEEL
GALVANIZED STEEL
STAINLESS STEEL
NICKEL-CHROME STEEL
PHOSPHOR BRONZE
BRASS
COPPER
MONEL
NICKEL
ALUMINUM

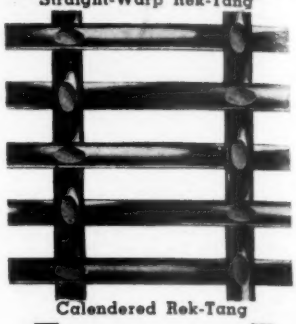
•

Any Special Metal for Any Service



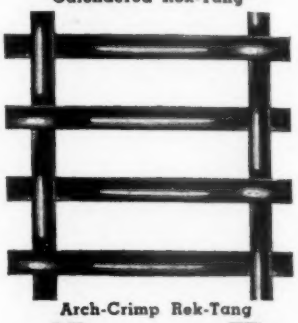
Straight-Warp Rek-Tang

Arch-Crimp

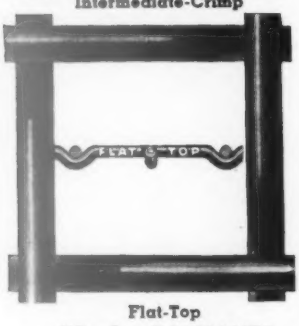


Calendered Rek-Tang

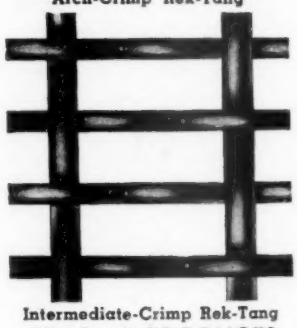
Intermediate-Crimp



Arch-Crimp Rek-Tang



Flat-Top



Intermediate-Crimp Rek-Tang

"Perfect" WEAVES

Arch-Crimp
Coiled
Double-Crimp
Double-Fill
Dutch
Flat-Top
Intermediate-Crimp
Rek-Tang
Selvage-Edge
Straight-Warp
Stranded
Sta-Tru
Triple-Warp
Twilled
Twisted-Fill
Twisted-Warp

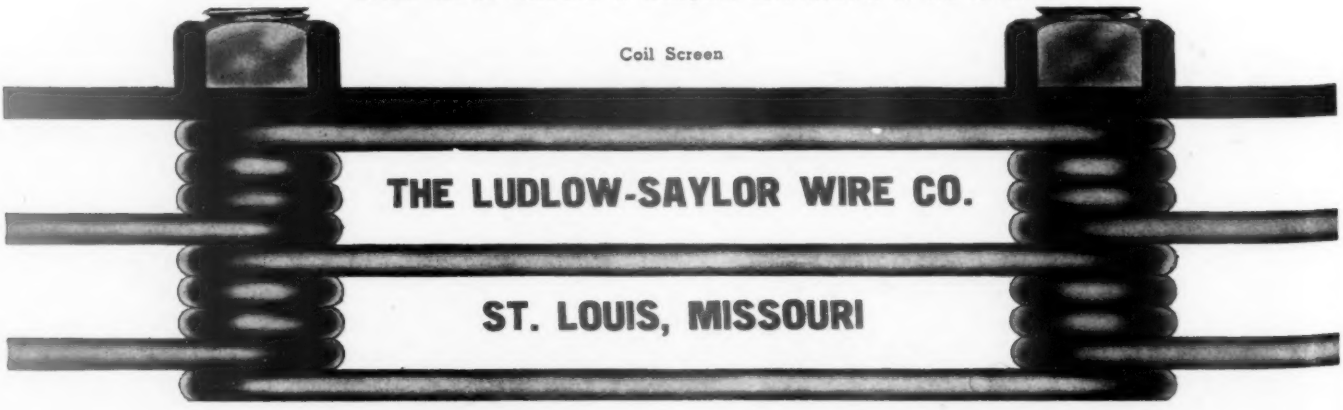
"Perfect" PROCESSING

Arc-Welding
Bending
Binding
Brazing
Calendering
Coiling
Crimping
Cutting
Dipping
Dishing
Finishing
Flanging
Flattening
Forming
Framing
Galvanizing
Jointing
Knuckling
Painting
Rolling
Selvaging
Shaping
Shearing
Slitting
Soldering
Spot-Welding
Squaring
Stitching
Tack Welding
Trimming

"Perfect" PRODUCTS

Baskets
Circles
Coils
Cones
Cylinders
Discs
Forms
Leaves
Lengths
Panels
Pieces
Ribbons
Rings
Rolls
Sections
Segments
Strips
Templates

Illustrations show items listed in bold-face type. Other wire cloths and screens will be illustrated in subsequent advertisements of this series.



Coil Screen

THE LUDLOW-SAYLOR WIRE CO.

ST. LOUIS, MISSOURI

CHAIN *too,*

has reached new ceilings!

THE LIBRARY OF CONGRESS SERIAL RECORD
MAR 17 1944

• Flying and fighting seven miles up, the modern war plane, capturing our fascinated wonder, is the symbol and the result of vast developments in every sphere of science and industry. In that plane, as in the plant that built it, and throughout industry today, power is produced, applied and controlled more efficiently because of continuing and accelerated engineering progress.

Chains used today for aircraft controls, for tanks, trucks, jeeps and other motive equipment, for conveying and mechanical power transmission throughout industry, have been vastly improved to meet today's exacting demands. Link-Belt engineers and metallurgists have perfected lighter, stronger, more precisely built chains of every type, answering, even anticipating, the needs of our production and fighting forces. Now, more than ever, Link-Belt is the recognized source for chain, and for the engineering service to aid in utilizing these newer, better chains to the great advantage of all industry.

Consult Link-Belt on any problem relating to mechanical power transmission, materials handling or conveying. You are assured of reliable, unbiased recommendations and of efficient, economical equipment.

LINK-BELT COMPANY

The Leading Manufacturer of Materials Handling and Power Transmission Machinery

Indianapolis 6, Chicago 9, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices, warehouses and distributors in principal cities.

9376-A

Chicago Plants · Indianapolis Plant · Ordnance Plant

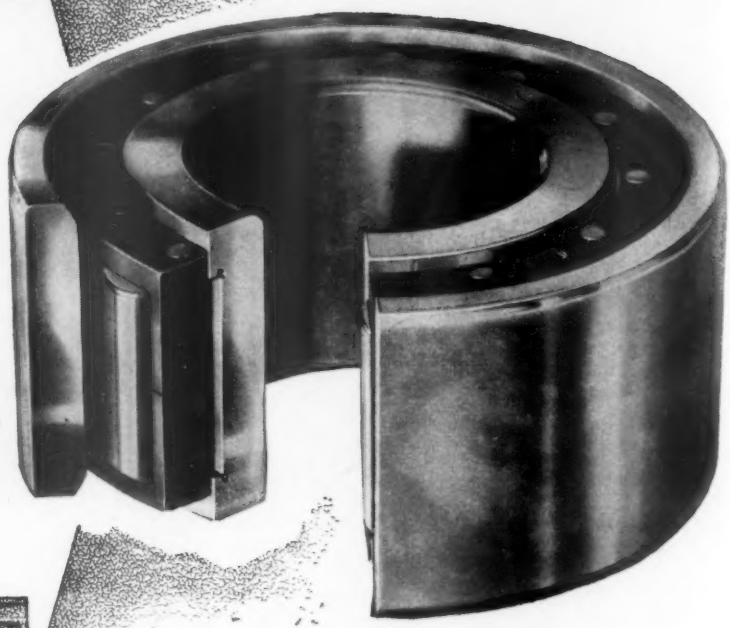
LINK-BELT

CHAINS AND SPROCKETS

for conveyors • for drives • for power transmission

PIT AND QUARRY, February, 1944, Vol. 36, No. 8. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additinal for each year. Single copies 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

When Costs Count OVERLOADED BEARINGS MUST GO!

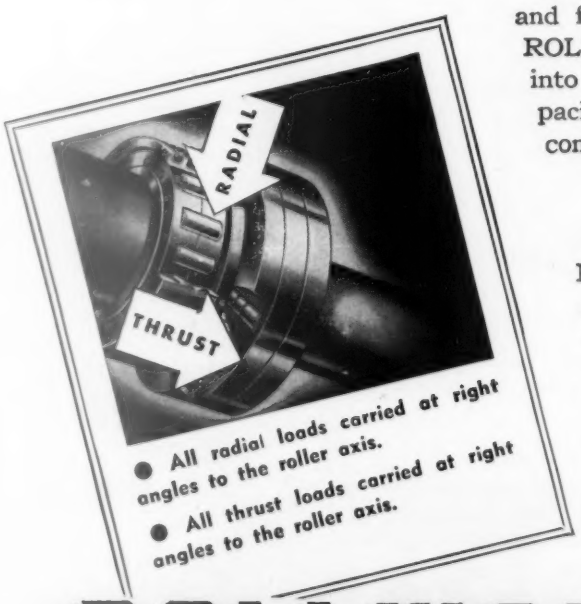


Switch to ROLLWAY'S RIGHT-ANGLE LOADING

before re-conversion starts . . .

The day is coming when fractions of a mill—not fractions of a minute—will win or lose orders. Buyers will worry about maintenance, not manpower . . . about saving money instead of metals.

You'll be sitting pretty if your machines offer the long life and freedom from trouble of ROLLWAY RIGHT-ANGLE ROLLER BEARINGS. Because Rollways split the load into *pure* radial and *pure* thrust! They increase load capacity . . . banish overloads . . . eliminate the oblique and composite forces which overreach elastic limits.



● All radial loads carried at right angles to the roller axis.

● All thrust loads carried at right angles to the roller axis.

PURE RADIAL OR PURE THRUST BEARINGS

There's no doubling up of load components with Rollway Bearings. Each load component is carried by a separate bearing assembly. That means thrust bearings that carry *pure* thrust, and radial bearings that carry *pure* radial — nothing else. Load capacity in given dimensional limits is greater. Unit loads per roller and bearing are lower. And the hazard of permanent set or quick failure due to overloads practically vanishes.

Don't wait until re-conversion problems overwhelm you. Find out now. Send drawings or detailed description for free bearing analysis and recommendation. S.A.E. or American Standard metric dimensions and tolerances are available for most applications, assuring quick supply and low cost.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, NEW YORK

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**

Order NOW

TO PRODUCE AIR MORE CHEAPLY
FOR PLANT IMPROVEMENT, EXPANSION, OR RECONVERSION

YOU may want an air compressor *quick* — for plant improvement, or expansion, or reconversion. If so, let's get together now.

Your Cooper-Bessemer Compressor is not a puny "war model", designed as a stop-gap or built for the emergency. It produces air at rock-bottom cost. Every machine we ship, now or after Victory, is as dependable as the best we've ever made. It's the same top-quality, time-proven construction that's piling year upon year of uninterrupted, satisfactory performance for our compressors in such vital fields as gas transmission, petroleum refining, synthetics and the process industries. Powered by a rugged, efficient, economical G-MV engine, either gas or diesel fueled — or motor driven, if you prefer.

We're taking orders today for compressors and engines. Our plants face no reconversion problems. We are ready to serve private industry in 1944.

Let us help you make a start on your re-equipment problem now. We'll be glad to have a representative sit down with you at your convenience, to determine what models best serve your needs, and get your compressors and engines earmarked in advance on our 1944 delivery program. Today is not too early.

THE Cooper-Bessemer CORPORATION
Mt. Vernon, Ohio • Grove City, Pa.

BUILDERS OF DEPENDABLE ENGINES FOR 111 YEARS

On This Screw Machine . . . .

GATES V-Belts of Special Synthetic Rubber

wear more than 3-TIMES as long as belts of NATURAL Rubber!

Here is an excellent example of how well it pays to consult the Gates Field Engineer on *any* problem of drive operation.

On the screw machine pictured above, the Macomb Screw Products Company used natural rubber V-belts, getting 6 to 8 months' wear at 12 to 18 hours per day. Because a *severe oil condition* existed, the Gates Field Engineer recommended changing to Gates V-belts of special synthetic rubber. These special synthetic belts are averaging 18 to 24 months' wear at *24* hours per day—an increase of 300% to 400% in belt life!

You may not have in your plant any drive which offers this *particular* problem—yet *other* service conditions may be such that a V-belt of some special construction can most profitably be used. For example, in your particular installation, V-belts with tension members composed of flexible steel cables may prove to be the most efficient and economical. Again, Rayon Cord V-belts or Static-Safety V-belts may best fit your special need.

In any case, the wisest move you can make is to phone the Gates Field Engineer. He is thoroughly competent to analyze any drive problem. He is completely informed on the nature and advantages of every type of belt. He will always recommend the practice that will be most efficient and economical for you.

Your Gates Field Engineer Can Tell You Whether YOU Need—

1. *Special* Synthetic V-Belts
2. Steel Cable V-Belts
3. Cotton Cord V-Belts
4. Static-Safety V-Belts
5. Rayon Cord V-Belts

Your Telephone Directory Will Give You the Gates Field Engineer's Phone Number

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

442

GATES VULCO ROPE DRIVES

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DENVER, COLO. 999 South Broadway
DALLAS, TEXAS 2213 Griffin Street
PORTLAND, ORE. 333 N. W. 5th Avenue
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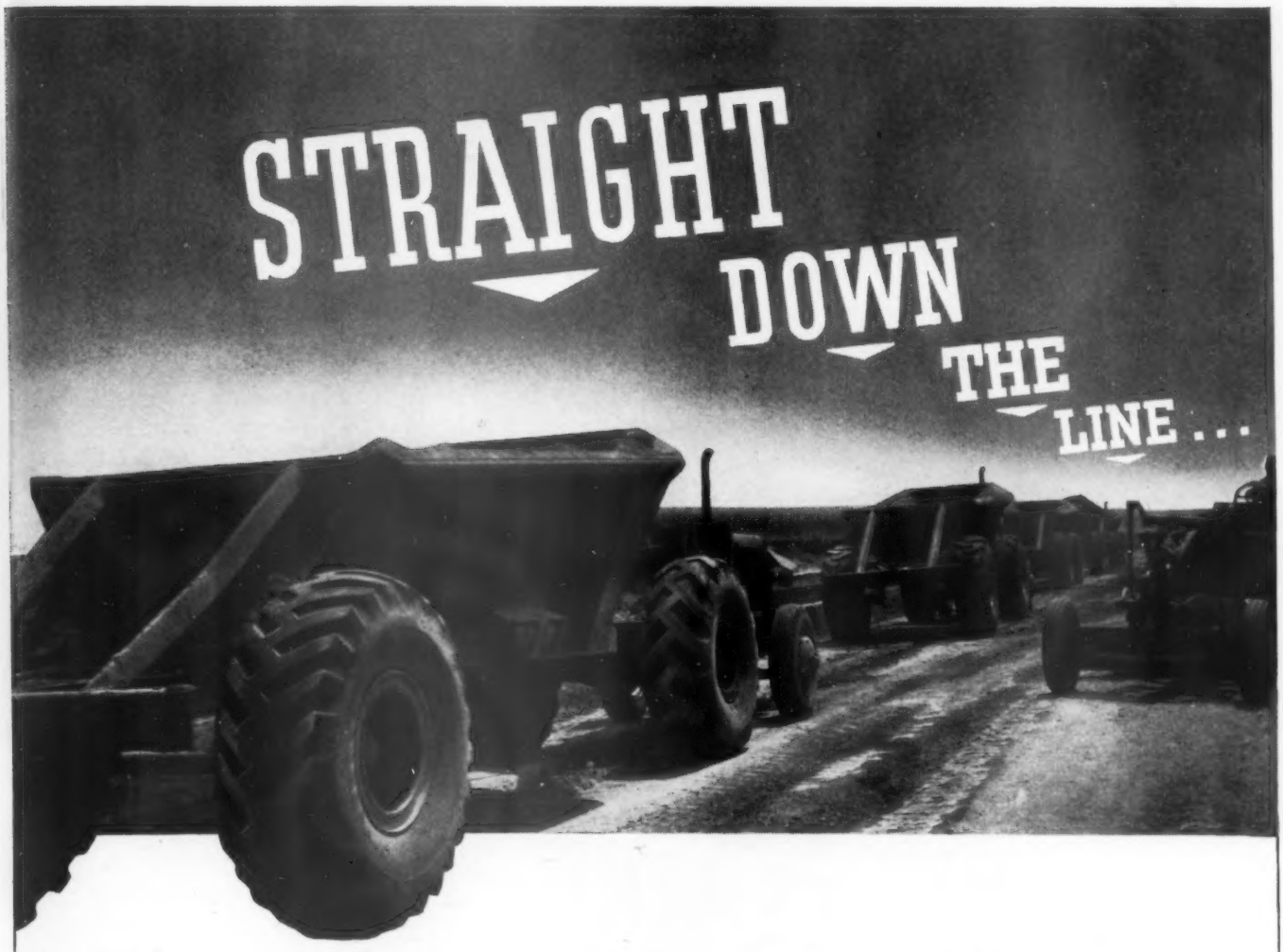


GULF QUALITY LUBRICANTS

reduce maintenance costs and insure maximum operating efficiency

Whatever type of mechanized equipment you are operating—it must have regular lubrication. And now, more than ever, it pays to use lubricating oils which provide an extra margin of protection to vital parts.

On job after job throughout the country, Gulf Quality Lubricants are being used "straight down the line". They are playing an enormously important part in keeping contracting equipment rolling under the most punishing conditions. They are *good* insurance against breakdowns and mechanical troubles.

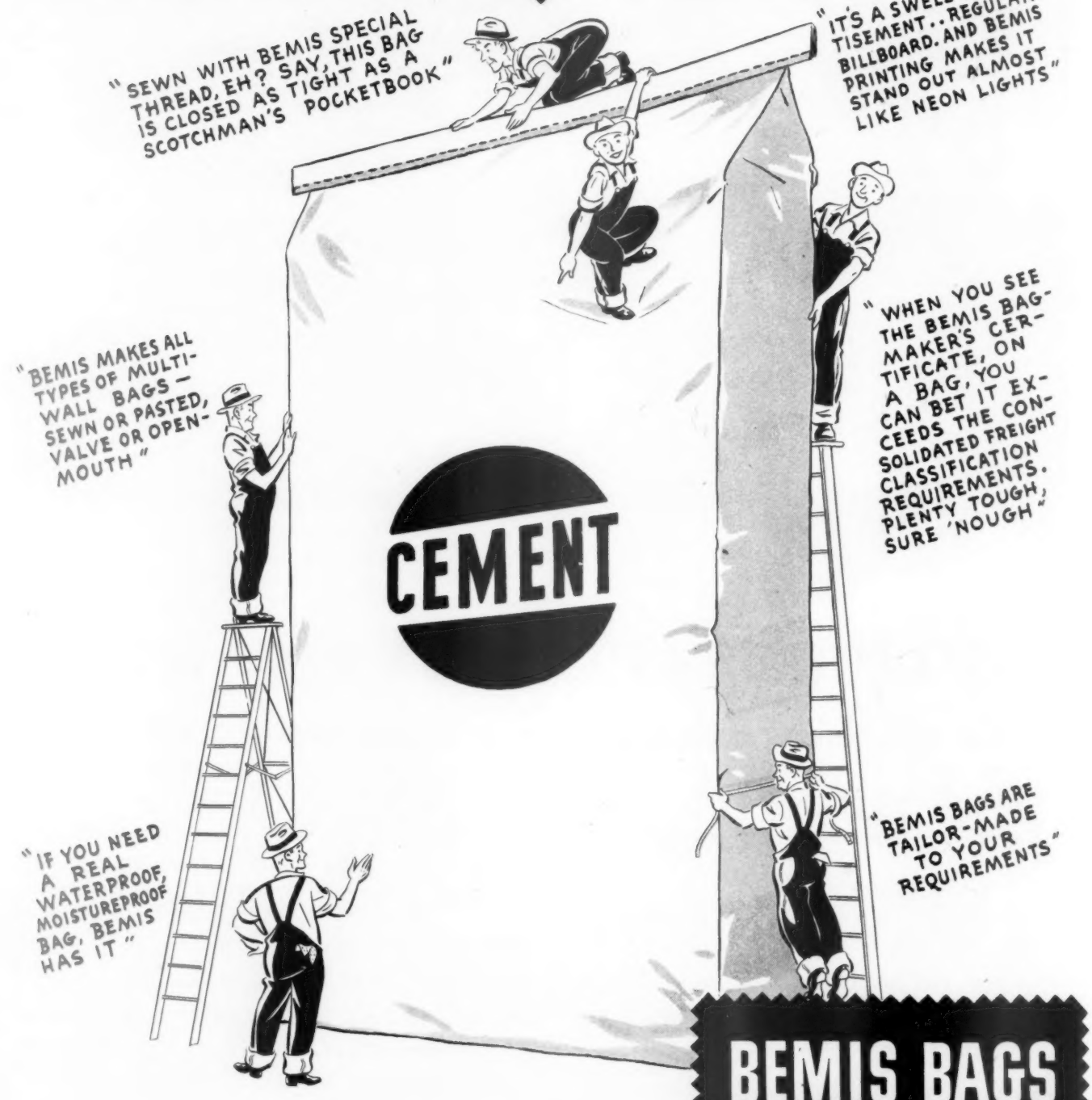
This year make sure that *your* equipment gets the benefits of Gulf's higher quality lubricants. They are quickly available to you through more than 1200 warehouses located in 30 states from Maine to New Mexico. Write or phone your nearest Gulf office today.

Speed the Day of Victory— Buy More War Bonds

GULF

GULF OIL CORPORATION
GULF REFINING COMPANY
GULF BUILDING, PITTSBURGH, PA.

Bemis MULTIWALL PAPER SHIPPING BAGS...


"SEWN WITH BEMIS SPECIAL THREAD, EH? SAY, THIS BAG IS CLOSED AS TIGHT AS A SCOTCHMAN'S POCKETBOOK"
"IT'S A SWELL ADVERTISEMENT.. REGULAR BILLBOARD. AND BEMIS PRINTING MAKES IT STAND OUT ALMOST LIKE NEON LIGHTS"
"BEMIS MAKES ALL TYPES OF MULTI-WALL BAGS — SEWN OR PASTED, VALVE OR OPEN-MOUTH"
"WHEN YOU SEE THE BEMIS BAG-MAKER'S CERTIFICATE, ON A BAG, YOU CAN BET IT EXCEEDS THE CONSOLIDATED FREIGHT CLASSIFICATION REQUIREMENTS. PLENTY TOUGH, SURE 'NOUGH"
CEMENT
"IF YOU NEED A REAL WATERPROOF, MOISTUREPROOF BAG, BEMIS HAS IT"
"BEMIS BAGS ARE TAILOR-MADE TO YOUR REQUIREMENTS"

Multiwall Paper, Waterproof Paper Lined, Cotton and Burlap Bags for Rock Products

BEMIS BAGS

BEMIS BRO. BAG CO.

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San Francisco, Calif. • Wilmington, Calif. • St. Helens, Ore.

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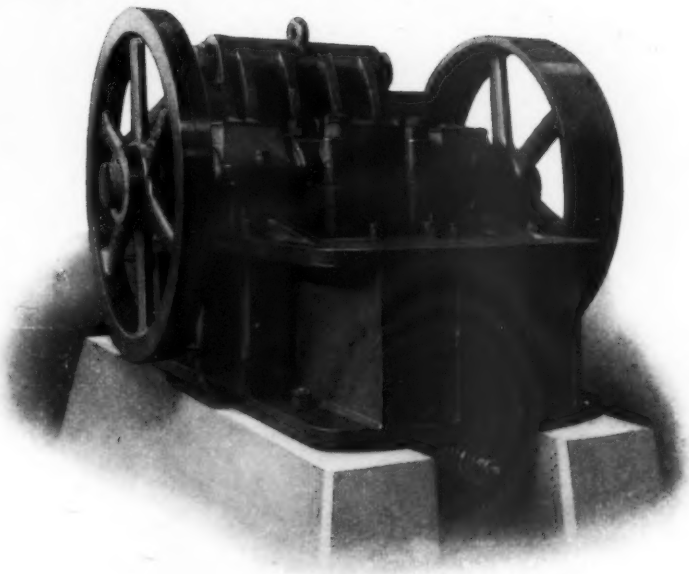
BETTER BAGS FOR 86 YEARS

WELDED!

the FRAME is Better than a Steel Forging!



When the various pieces of rolled steel plate that compose the whole are welded in their proper places by our original scientific methods, a crusher frame is produced that is stronger and more dependable than could be made in any other way of any other material. No strains are set up, and the welded joints are so thoroughly fused as to be stronger than the parent metal. Literally, the assembled unit is in one piece, overwhelmingly strong, yet of lighter weight than could be attained in a casting.

The frame is not the only valuable feature of the Type H Crusher. An improved Swing Jaw Suspension saves power and wear, and CURVED JAW PLATES enable FINER crushing at GREATER CAPACITY without increase of power used. The wearing metal consumed per ton is minimum, and the product is more cubical and contains less waste fines, because the curved jaw plates eliminate all choking.

The Type H Crusher is built in a wide range of sizes,—eight sizes from 8" x 12" to 30" x 42",—thus covering almost every ordinary requirement.

Investigate this machine closely, before you buy. Our representative will be glad to talk it over with you, in person, if you like. Write us.

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
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You wouldn't handcuff a PITCHER!

LAY·SET *Preformed* IS FREE!

It is the preforming process that frees LAY-SET wire rope of self-destructive internal stresses. Being preformed, Hazard LAY-SET is not shackled by twisted strains. Rather, every wire and strand is free to do its full share of work from the very first hour it is put on your machine.

Hazard LAY-SET Preformed is a "pre-broken-in" rope; it resists kinking and snarling; it handles easier, faster, safer, and cheaper. It possesses high resistance to bending fatigue and so lasts longer—*much* longer than non-preformed wire rope. Regardless of where or how you use wire rope, whether for running or standing service, specify Hazard LAY-SET Preformed—the rope that gives you greater dollar value.

Ever since Pearl Harbor, and even before, Hazard LAY-SET Preformed has been saving time and money for the Government, the Armed Forces, and the taxpayer.

ARMY E NAVY

HAZARD WIRE ROPE DIVISION, Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, Tacoma, San Francisco

AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT • CONNECTICUT

GREEN SIGNIFIES SAFETY

HAZARD LAY·SET *Preformed* WIRE ROPE

NO OTHER POWER SHOVEL—

DUAL CROWD! INDEPENDENT PLUS AUTOMATIC Digging Power Plus

—brings to the mining operation the advantages of the Northwest Dual Independent Crowd. The Dual Independent Crowd provides full independence of dipper control combined with the utilization of a force for digging in the hoist cable which other shovels waste. The Dual Independent Crowd makes possible greater output in tougher digging. This is just one of the many advantages that has made the Northwest a real Rock Shovel.

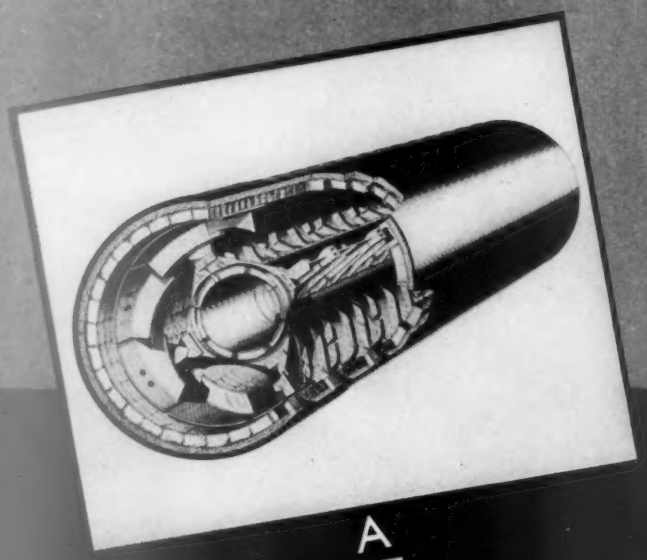
NORTHWEST ENGINEERING COMPANY
1806 Steger Building
28 E. Jackson Boulevard
Chicago, Illinois

NORTHWEST

Convertible for any Mining, Material Handling or Excavation Problem

If it's a real Rock Shovel you won't have to worry about output in dirt

3 WAYS TO SAVE FUEL



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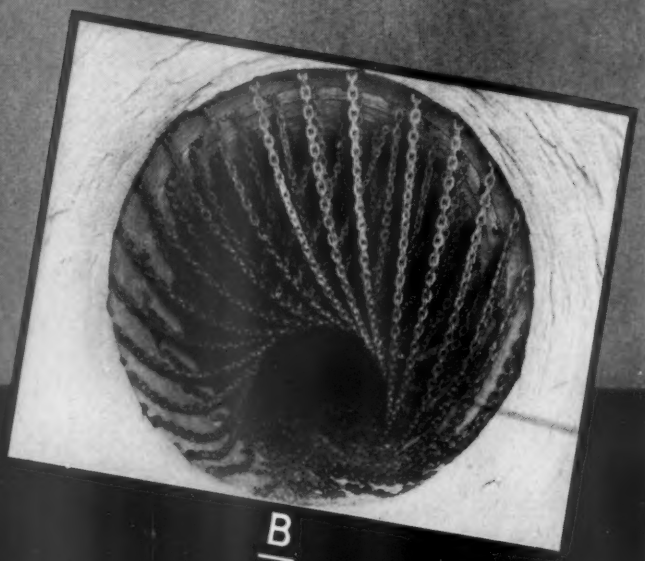

B

C

A
Heat Exchangers for Dry Kilns

B
Chain Systems for Wet Kilns

C
Unax Cooler Integral with Rotary Kiln

F. L. SMIDTH & CO.

60 EAST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.

We're proud to have had Haiss equipment join our fighting forces throughout the world. As every war worker knows, there is a deep feeling of satisfaction and pride in having a hand in making a fighting tool for use against the enemy.

Where and how are Haiss units used? . . . It's a military secret, we can't discuss . . . but there is one thing about Haiss equipment that can be said because it's common knowledge: wherever our loaders, conveyors and buckets are they will get the work done F-A-S-T—and stick to it. Design efficiency and engineered ruggedness have characterized Haiss equipment for over 50 years of service to the Construction industry everywhere.

SOME HAISS EQUIPMENT USES

Loaders for putting material into trucks twice as fast as an equivalent general purpose tool.

Loaders for making shallow grading cuts—as in stripping top soil at an airport, or otherwise.

Clamshell Buckets for high-power excavating—and getting the work done regardless of handicaps.

Belt Conveyors for loading, stacking and labor saving handling at dockside, roofed-in warehouse, or out-in-the-open.

Portable Conveyors for placing concrete—eliminating plank walkways and wheel barrow labor.

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HAISS-BUILT MEANS THE BEST IN DIGGING & LOADING EQUIPMENT

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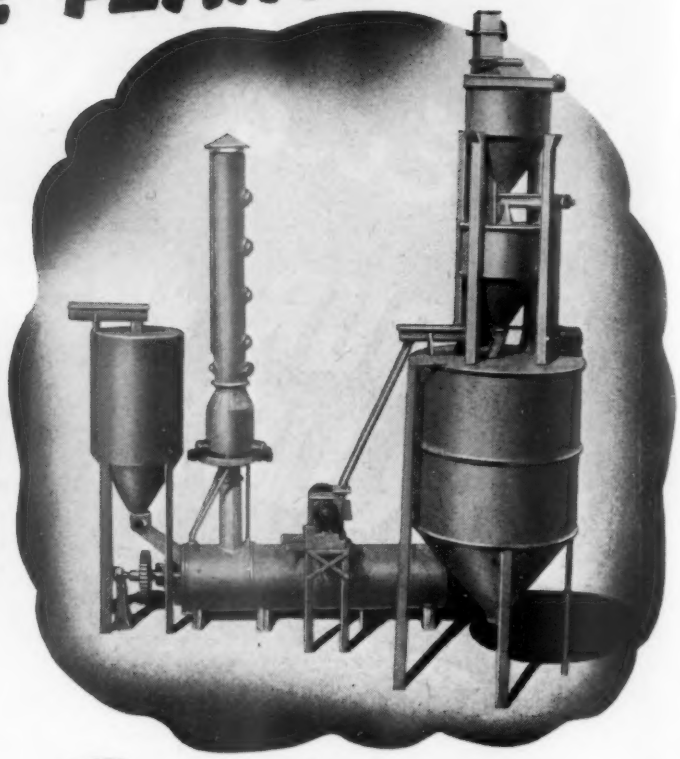
Write, wire or phone for prices, catalogs and deliveries

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

LIME HYDRATE PLANTS—

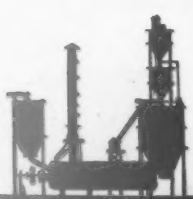


Stop that loss . . Save lime fines

This one-man operated, completely automatic hydrate plant will eliminate that loss of the finest part of your product (lime fines that accumulate on the roofs of surrounding buildings and create a dust nuisance), and will give you absolute control with higher quality and uniformity of product. It's the Kuntz gravity system, only known method today which will give you these essential advantages AND . . . it costs less to install and less to operate than any other system. These are a few features:

1. The Kuntz system of hydration and separation makes it possible to prepare marketable hydrates to meet more exacting specifications, even with lime having as high as ten per cent impurities and insolubles.
2. Multiple classification as to fineness and purity is accomplished in one operation.
3. This complete control of product is accomplished with less horsepower and less floor space.
4. The pure atmosphere of the Kuntz hydrator provides complete association of lime and water. Elements not CaO or MgO are immediately removed by the initial breakdown of the lime through a patented dam and sump collecting device.
5. Lime fines are saved by patented dust control. This feature also utilizes the heat of hydration to heat the water applied to the hydrator.
6. The Kuntz gravity system of lime hydration and lime dust control can be applied to any type of hydrate plant. Operation may be either batch or continuous.

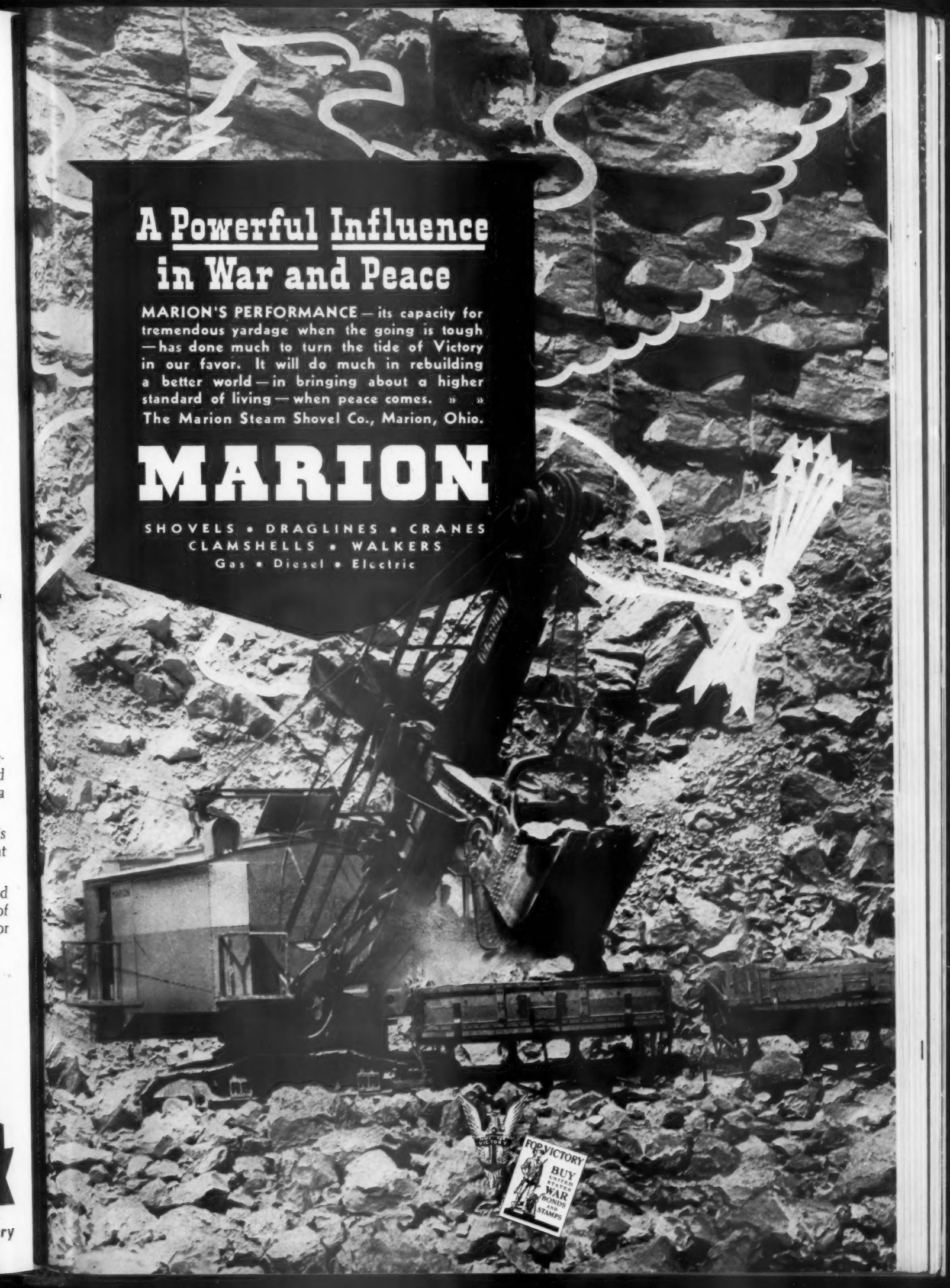
These modern Kuntz gravity systems were developed by experienced engineers who have built, operated and serviced every known type of lime hydrate plant during the past twenty-five years. Write our engineers today for more complete details.



OTHER McGANN PRODUCTS — LIME PLANTS COMPLETE - HYDRATORS - SHAFT KILNS - ROTARY KILNS - DRYING MACHINERY - TANKS - BINS - GREY IRON CASTINGS - SUGAR MACHINERY - SPECIAL MACHINERY FROM ENGINEER'S DESIGNS

LIME & HYDRATE PLANTS CO.

Associates McGANN MANUFACTURING COMPANY, *York, Pa.*

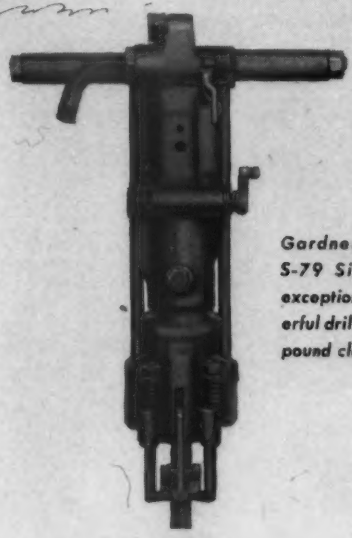

A Powerful Influence
in War and Peace
MARION'S PERFORMANCE — its capacity for tremendous yardage when the going is tough — has done much to turn the tide of Victory in our favor. It will do much in rebuilding a better world — in bringing about a higher standard of living — when peace comes. » »
The Marion Steam Shovel Co., Marion, Ohio.
MARION
SHOVELS • DRAGLINES • CRANES
CLAMSHELLS • WALKERS
Gas • Diesel • Electric
FOR VICTORY
BUY
UNITED STATES
WAR
BONDS
AND
STAMPS

NOBODY LIKES ROUGH RIDING

WHO likes rough riding on a construction job—nobody! The men can't do their best work with rough-riding rock drills—and contractors can't make satisfactory progress under such conditions.

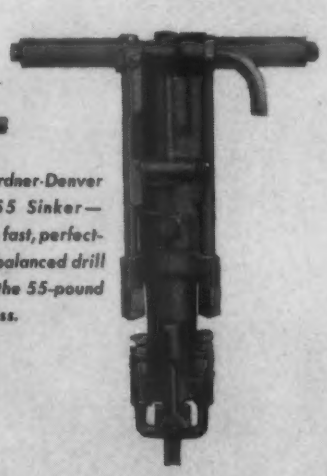
Gardner-Denver Sinkers are *popular* drills because they are especially designed for easy riding and balanced performance. And because they permit more footage per shift, they're preferred by contractors, and quarry operators too!

Noted for their powerful four-pawl rotation—for their thorough hole cleaning—and for their low air consumption —Gardner-Denver Sinkers can increase output on your workings. For full information, write Gardner-Denver Company, Quincy, Illinois.

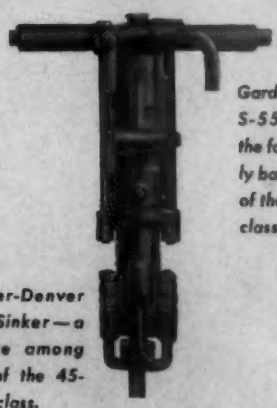


Gardner-Denver S-79 Sinker—an exceptionally powerful drill of the 80-pound class.

Gardner-Denver S-73 Sinker—67 pounds of speed and power.



Gardner-Denver S-55 Sinker—the fast, perfectly balanced drill of the 55-pound class.



Gardner-Denver S-45 Sinker—a favorite among users of the 45-pound class.

Gardner-Denver S-33 Sinker—an outstanding performer for its weight class.

GARDNER-DENVER

Since 1859

Going Places !

The U. S. Navy built thousands of mammoth Landing Boats for invasions all over the world. This L. B. with its gaping doors, measures 375′ long, displaces 5,500 tons. Protected by rapid-fire guns. Shallow draft for beaching. Transports, jeeps, trucks, tanks, field pieces, bulldozers, supplies and food.

The top illustration is the artist's conception of the L. B. (beached) showing troops and war equipment disembarking. Other sketches show Gar Wood war equipment: Cargo and troop body, Gun Carriage, Dump Body, Bulldozer, Wrecker Crane, Refueling Tank and Patrol Boat.

Bonds Contributed to Building L. B's and other War Equipment shown. · Buy Bonds. · Hasten Surrender.

GAR WOOD INDUSTRIES, INC.

DETROIT 11 MICHIGAN

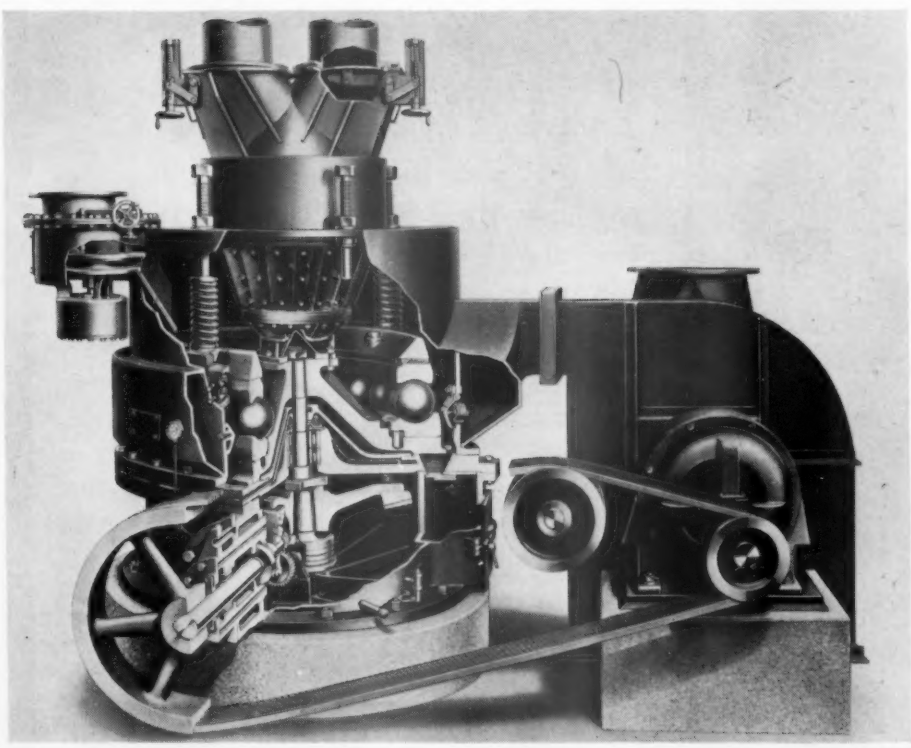
GW

A FORWARD LOOK

COAL stands supreme as the economical fuel for firing cement kilns. About 85 per cent of the cement produced in this country is burned in kilns fired with pulverized coal; direct firing accounts for approximately 40 per cent of the total production.

In post-war days, there will unquestionably be a considerable increase in the use of direct firing equipment. For overall economy, and generally satisfactory performance, the B&W Type E Pulverizer is the logical choice for this purpose.

THE BABCOCK & WILCOX CO.
85 LIBERTY ST., NEW YORK 6, N. Y.



C-56

★ BUY MORE WAR BONDS! ★

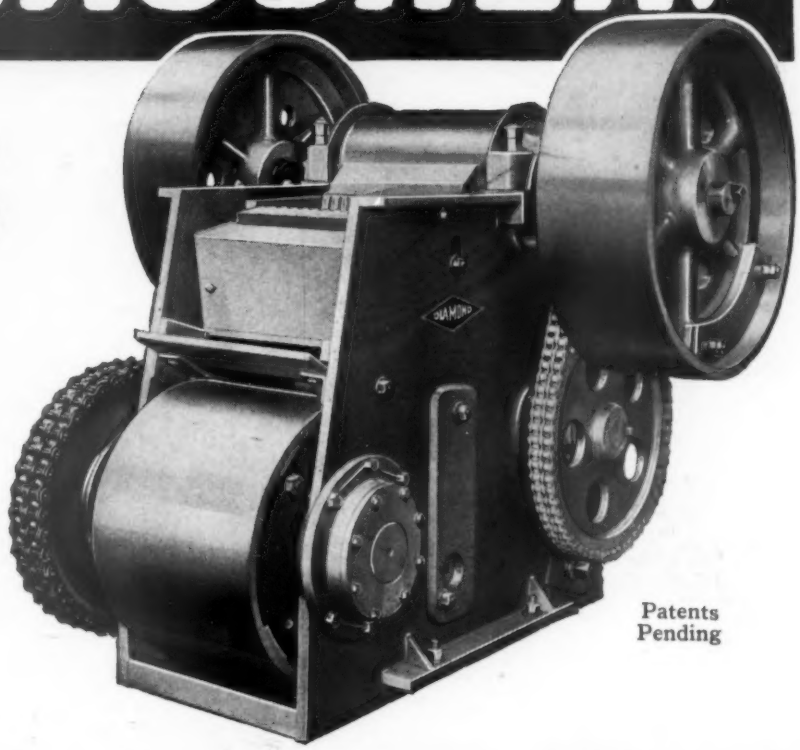
BABCOCK & WILCOX

A SENSATIONAL NEW CRUSHER!

The greatest advance in crusher design in 30 years

DIAMOND

"DUAL-ACTION"



Patents Pending

It's BOTH a Jaw and Roll Crusher COMBINED in ONE Unit

The new DIAMOND "DUAL-ACTION" crusher is so revolutionary in design and its performance is so sensational that it is almost unbelievable.

Here are a few high lights of DIAMOND "DUAL-ACTION" performance and construction:

1. "DUAL-ACTION" *more than equals* the combined production of separate jaw and roll crushers of comparable size.
2. Uses only half the power, has *less* than half the weight, and costs considerably less than the two conventional units.
3. NO PACKING — positive forced feed prevents it. Less fines — very few slivers or flats.

IT'S A NATURAL FOR PORTABLE PLANTS

The DIAMOND "DUAL-ACTION" crusher makes possible a smaller, lighter and vastly more efficient portable plant. It will be shorter and lower with shorter main conveyor. The "DUAL-ACTION" saves more than 50% of space and weight required for separate jaw and roll crushers — and gives you an amazing capacity at radically reduced initial cost of plant.

SEND FOR BULLETIN

No matter what type of crushing you do, you cannot afford to overlook the new production and profit possibilities created by this startling new crusher.

WIRE, PHONE OR WRITE FOR BULLETIN D-44-M,
OR CONTACT ANY DIAMOND DEALER

DIAMOND **DIAMOND IRON WORKS, INC.** DIAMOND

ESTABLISHED 1880

AND THE MAHR MANUFACTURING CO. DIVISION

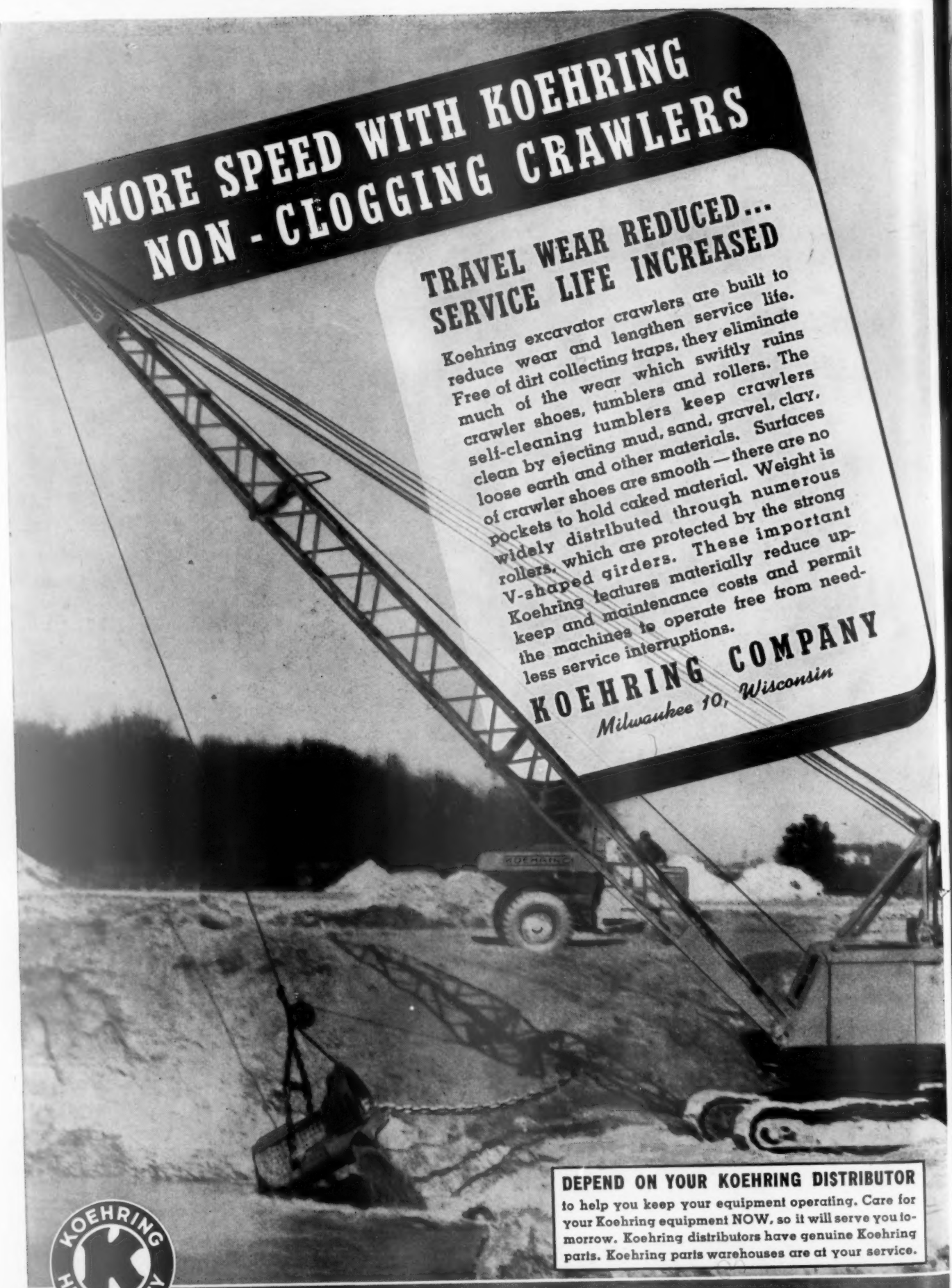
1801 SECOND STREET NORTH MINNEAPOLIS 11, MINN.

MORE SPEED WITH KOEHRING NON-CLOGGING CRAWLERS

TRAVEL WEAR REDUCED... SERVICE LIFE INCREASED

Koehring excavator crawlers are built to reduce wear and lengthen service life. Free of dirt collecting traps, they eliminate much of the wear which swiftly ruins crawler shoes, tumblers and rollers. The self-cleaning tumblers keep crawlers clean by ejecting mud, sand, gravel, clay, loose earth and other materials. Surfaces of crawler shoes are smooth—there are no pockets to hold caked material. Weight is widely distributed through numerous rollers, which are protected by the strong V-shaped girders. These important Koehring features materially reduce upkeep and maintenance costs and permit the machines to operate free from needless service interruptions.

KOEHRING COMPANY
Milwaukee 10, Wisconsin



DEPEND ON YOUR KOEHRING DISTRIBUTOR
to help you keep your equipment operating. Care for your Koehring equipment NOW, so it will serve you tomorrow. Koehring distributors have genuine Koehring parts. Koehring parts warehouses are at your service.

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

YOUR PEACETIME AGGREGATE PLANT *is being tested in New Guinea!*

Cedarapids

Built by IOWA

YOU can't build "too good" for war! But there have been manufacturers who have thought there was a limit to quality requirements for peacetime service. That hasn't been the slant that Iowa Engineers have taken on the development of Cedarapids equipment, and, if it was not for the terrible phases of the picture, we would welcome the opportunity the war presents to test and learn about Iowa performance under wartime's terrific stress for the improvement of peacetime equipment.

Cedarapids equipment has met and is satisfying the problems of war. A plant a day rolls out of the great Iowa assembly bay to some battlefront. The enormous wartime effort, *unequalled in this specific field of production by any other manufacturer of similar equipment,* will give Iowa an *experience* that will mean aggregate producing equipment that will be ever *more profitable* for the American contractor.

Talk to contractors that are using Iowa aggregate and asphalt plants. Check the records that Iowa plants are establishing for production. Find out about Iowa's low operating and maintenance costs.

Whether it is crushers, screens, bins, asphalt plants, driers or washing plants, Iowa is Headquarters for aggregate reduction and handling equipment. Can we help you with your plans?

THE IOWA LINE

of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS — STEEL BINS
BUCKET ELEVATORS
FEEDERS — TRAPS
PORTABLE PLACER MACHINES
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
TRAVELING (ROAD MIX) PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS

IOWA MANUFACTURING CO., Cedar Rapids, Iowa

Convey through pipe lines . . . by air . . .
No buckets, drags, chains or links

Today, more than ever before in history, material handling must be quick and efficient . . . equipment must stand up under unprecedented demands without failure . . . breakdowns, as far as possible, must be avoided.

The Fuller-Kinyon System is built for the rough going of today. Rugged construction, simple design, it will give you unfailing service day in and day out with no extraordinary attention or expense. Only one moving part, the screw in the pump . . . replacement can be made quickly.

Materials conveyed through pipe lines by air . . . no buckets, drags, chains, links, etc. Pipe lines can be hung overhead or buried underground; will not interfere with other equipment or operation in the plant. The system is clean, silent and explosion proof.

Tell us about your conveying problems. Chances are we can help.

FULLER COMPANY
CATASAUQUA, PENNSYLVANIA
Chicago 3—1144 Marquette Bldg.
San Francisco 4—421 Chancery Bldg.
Washington 5, D.C.—618 Colorado Bldg.

SOME MATERIALS CONVEYED BY FULLER-KINYON SYSTEMS

- Arsenic dust
- Asphalt filler dust
- Bag fume
- Baroid
- Barytes
- Catalyst
- Cement (Portland)
- Cement raw materials
- Clays (dried)
- Colox
- Copper converter dust
- Dextrine
- Dolomite
- Fullers earth
- Gypsum (calcined)
- Gypsum (raw)
- Lime (quick)
- Magnesite
- Manganese Dioxide
- Ore (pulverized)
- Rock dust
- Siliceous Powder
- Starch (Pearl)
- Starch (Powdered)

P-63

Here's the latest

On Maintaining Wearing Equipment

STOODY'S new engineering style specification sheets were compiled from information furnished by operators of tractors, power shovels, crushers, etc. They contain more and later information on methods of applying Stoody Hard-Facing Metals to wearing parts. Concise paragraphs give material requirements, rebuilding and hard-facing procedures and estimated service life of twenty wearing parts ordinarily requiring frequent replacement or repair. Large photographs illustrate appearance of properly hard-faced parts and sketches show extent of area of deposits.

A limited quantity of these Specification Sheets is available. Copies will be sent free on request as long as the supply lasts. To obtain your copy simply fill in and return the coupon.

Please send the Specification Sheets on maintaining tractors and earth moving equipment.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

STOODY COMPANY

1129 WEST SLAUSON • WHITTIER, CALIFORNIA

STOODY HARD-FACING ALLOYS

Stop wear . . . Eliminate Repair

POWER THAT "DELIVERS"

. . . on EVERY JOB!

Today's high speed quarrying schedules call for power that can deliver the highest possible output per hour of work; equipment that goes to work quickly, stays on the job and gets more done. Allis-Chalmers power fully meets these requirements. 2-Cycle Diesel tractors start instantly, work at high speeds, handle heavy loads with less gear shifting. 200-hour truck wheel lubrication saves on downtime — gives you extra man hours, more output per shift. These and other time and cost-saving features make them the choice of many rock and gravel men rushing out essential aggregate.

Built to keep pace with the powerful, fast-moving 2-Cycle Diesel tractors are the numerous Allied manufacturers' units — like trailbuilders, bulldozers, scrapers, winches — all handled by your Allis-Chalmers dealer. He furnishes you with much of the power you need for your operations — for road building and maintenance, for cleaning-up, stripping, hauling heavy equipment and similar work. In addition, he offers you a complete line of A-C Power Units, widely known for their reliable, economical performance . . . for driving your conveyors, pumps, screens, air compressors, crushers, shovels, hoists and draglines.

See your Allis-Chalmers dealer about the availability of equipment for your needs. Fifteen percent of our crawler tractor production is released for essential civilian use. If you qualify under government regulations, you can put the fast-working 2-Cycle Diesel tractors to work now.

ALLIS-CHALMERS

TRACTOR DIVISION · MILWAUKEE · U. S. A.

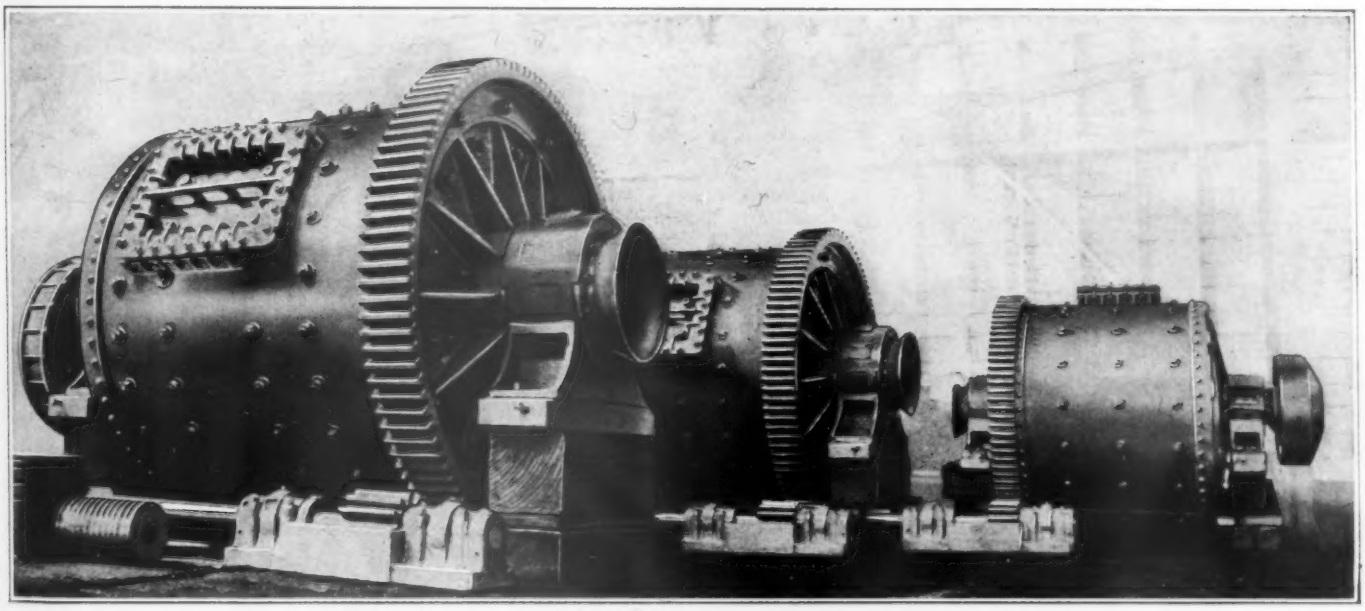
TRACTORS • ENGINES • ROAD MACHINERY

When the last beachhead is won . . . we'll be back with *even better* mills

Ever since Pearl Harbor, Straub skill and experience in the manufacture of mining machinery have gone into the production of government orders. Though war has taken practically our entire productive capacity, in some cases we can still help firms that have urgent need for mining machinery and adequate priorities. If this is your situation... or if you are in need of replacement parts...call on us and we'll be glad to do all we can.

But look ahead. Now's the time to think about your after-the-war production — to find out how Straub Equipment will give you less costly and more dependable mill production.

Write today for our recommendations on your particular problem. And remember that Straub Engineers are alway at your service to help with your milling plans or projects.



THINGS TO REMEMBER ABOUT RIB CONE BALL MILLS

1. Tough steel construction throughout makes them both lighter and stronger than many other mills. Also, they consume less power.

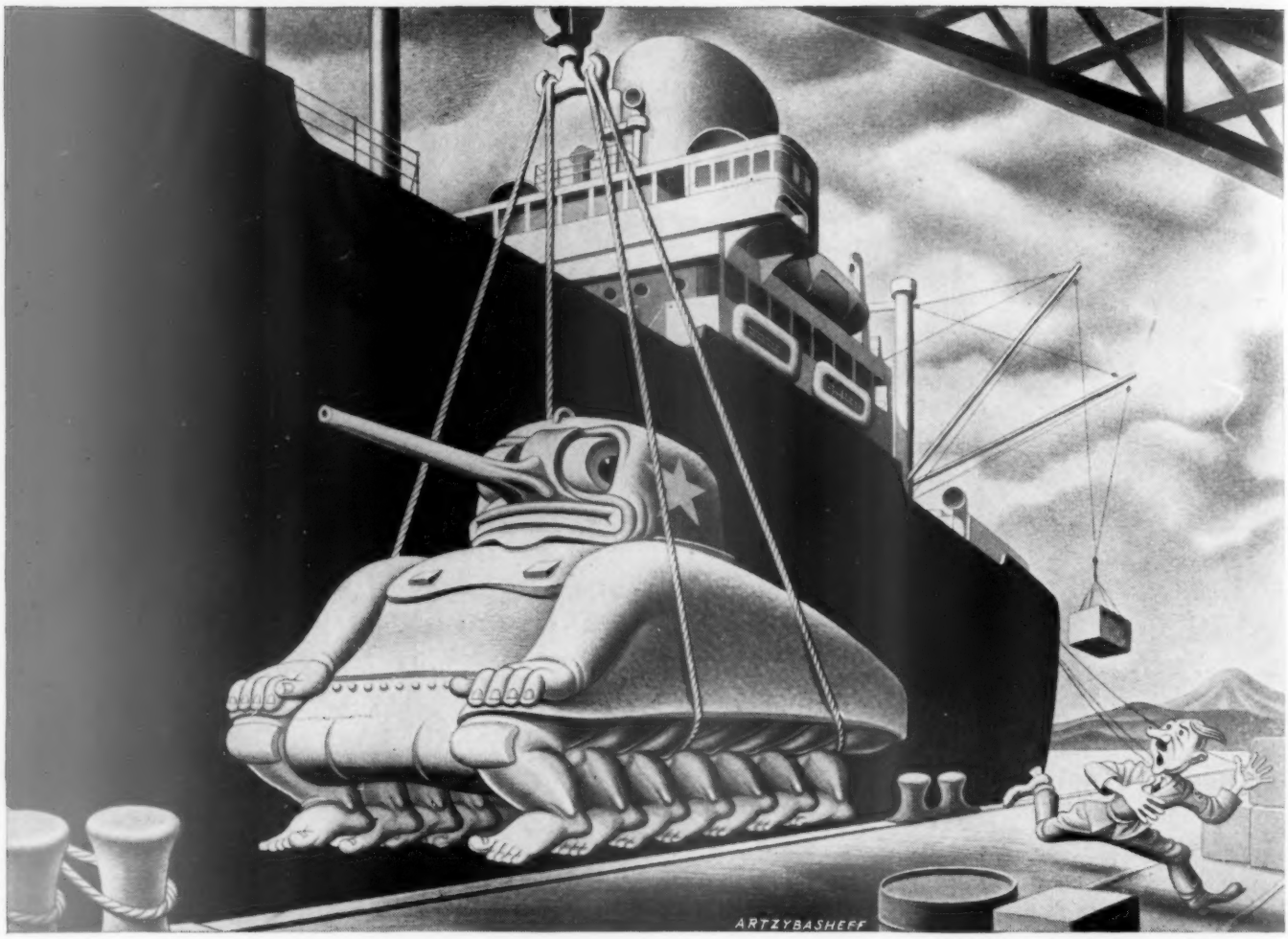
2. Liners are made of durable manganese steel. Gears are of generous proportions and made so they can be reversed when worn.

3. Exclusive spiral rib design keeps balls and coarse ore plowed back to the feed end of the mill, assuring efficient grinding plus rapid discharge of finely ground ore. Result: *absolute minimum of over-grinding or sliming.*

4. Rib Cone Mills embody every cost-cutting feature developed by Straub during 50 years of experience in the construction of mining machinery.

Pidanos Catalogo Espanol

STRAUB MFG. CO. • CHESTNUT STREET OAKLAND 7, CALIFORNIA



Enlarged reproduction free on request

If this Tank could *talk*...

"Do you know this buddy of mine who's setting me ashore to start erasing Nazis? Let me tell you about him. I first learned what a stout, dependable friend Wickwire Rope is at the mine, where I was just red ore. Then he helped make some of my fine steel parts; and to build me . . . and dig wells for my fuel. In every industry, and on our Liberty Ships, you'll find friendly Wickwire Rope, serving silently and dependably. He'll be serving on the trip to Berlin, too."

• • •

For 122 years Wickwire Spencer has specialized in steel wire and wire products, pioneering many of the industry's important achievements. Wherever quality and service count, that name has won a reputation we aim to continue. Let Wickwire Spencer engineers help on *your* war production—and in your planning ahead.

WILL *YOU* HELP?

Every foot of famous WICKWIRE quality rope is needed to help in vital war production here at home, on the Victory Ships, and at the fronts. YOU can help by making the wire rope YOU use last longer.

FREE BOOK TELLS HOW

Its 82 pages contain:

78 pictures of right and wrong ways
41 wire rope life savers
20 diagrams, tables, graphs and charts

SEND FOR YOUR FREE COPY.

Send your wire rope questions to:

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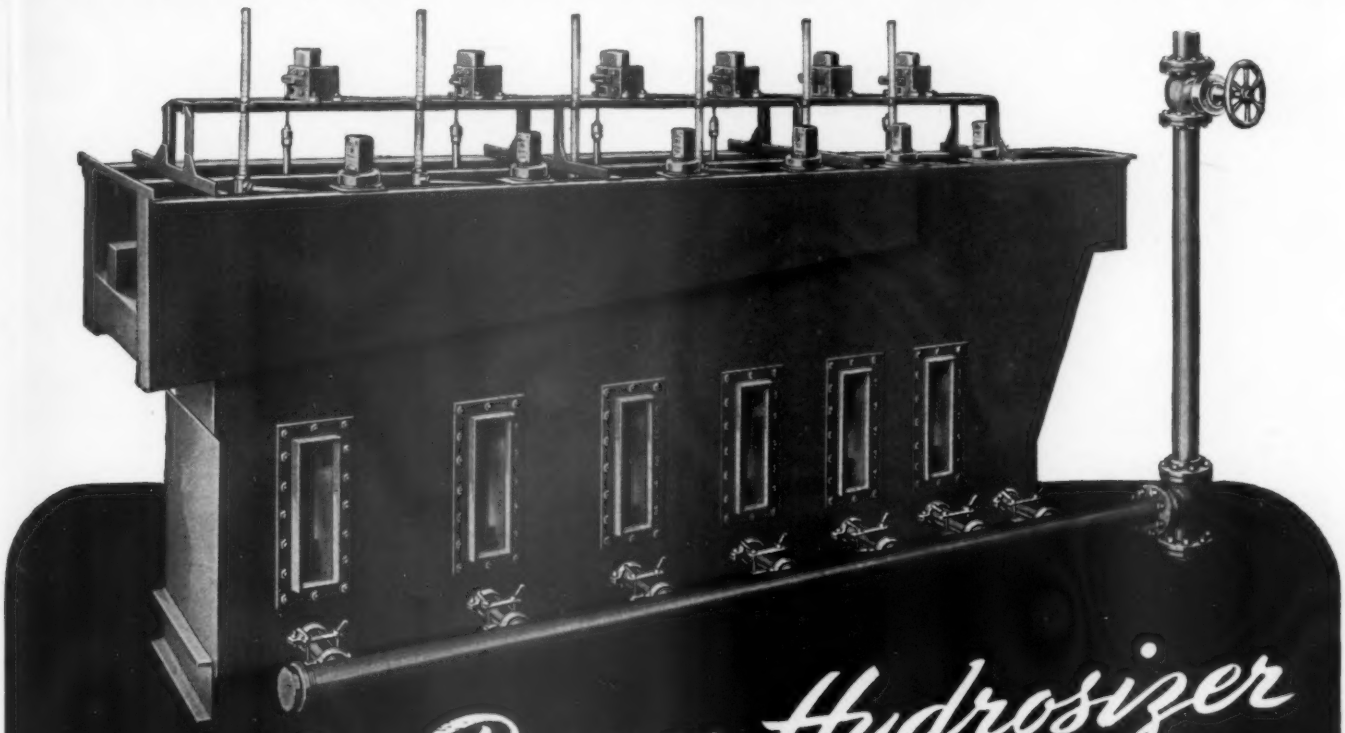
AUTOMATIC, SUPERSENSITIVE DENSITY CONTROL



the New Dorrco Hydrosizer

A new hydraulic classifier, the Dorrco Hydrosizer provides fully automatic control of a sensitivity never before approached in such a unit. It produces a more accurately sized and better concentrated series of sands, and has possibilities of application beyond the present scope of hydraulic classification.

New and unique design features are responsible for the superior performance of the new Hydrosizer . . . already proven by a number of installations. Supersensitive control equipment delivers a more uniformly graded product . . . and once set by the operator requires no further attention barring major changes in feed characteristics.

The Dorrco Hydrosizer represents the last word in hydraulic classification . . . applicable wherever 4 mesh or finer materials of varying specific gravities or particle sizes are to be graded. Check the advantages at the right — and for complete information write to our nearest office.

ADVANTAGES OF THE *DORRCO HYDROSIZER*

1. **Simple Control**—changes in hydrostatic tube clearly visible—control equipment close by and easy to set.
2. **Fully Automatic**—no operating attention needed except where major changes in feed characteristics occur.
3. **More Accurate Sizing** due to elimination of lag in changing valve opening.
4. **Preliminary Sorting** by feed compartment preceding #1 pocket.
5. **Easy Cleanout** due to high pressure water connection beneath each constriction plate.
6. **No build-up of particles** on constriction plate is possible, due to new design.

DORRCO

THE DORR COMPANY, ENGINEERS

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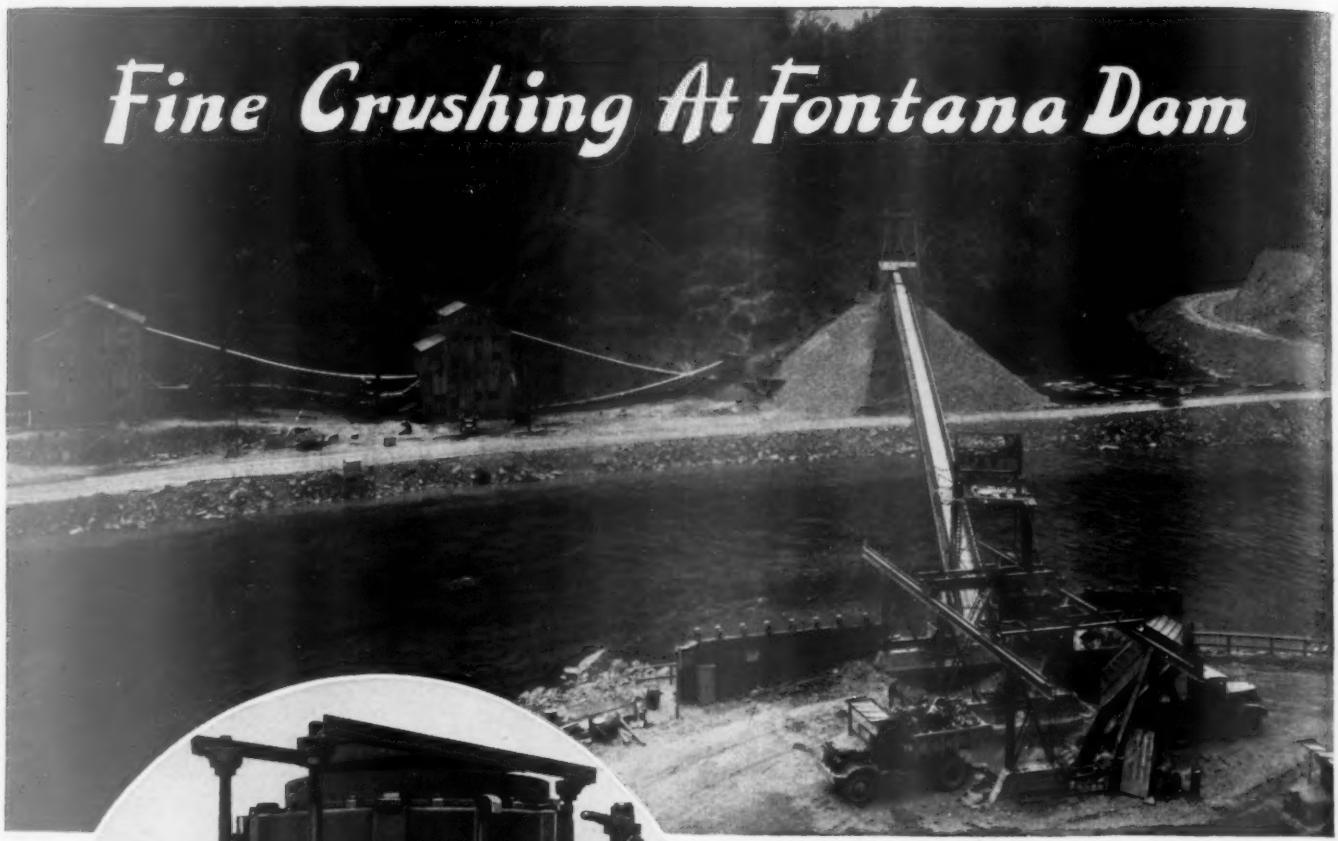
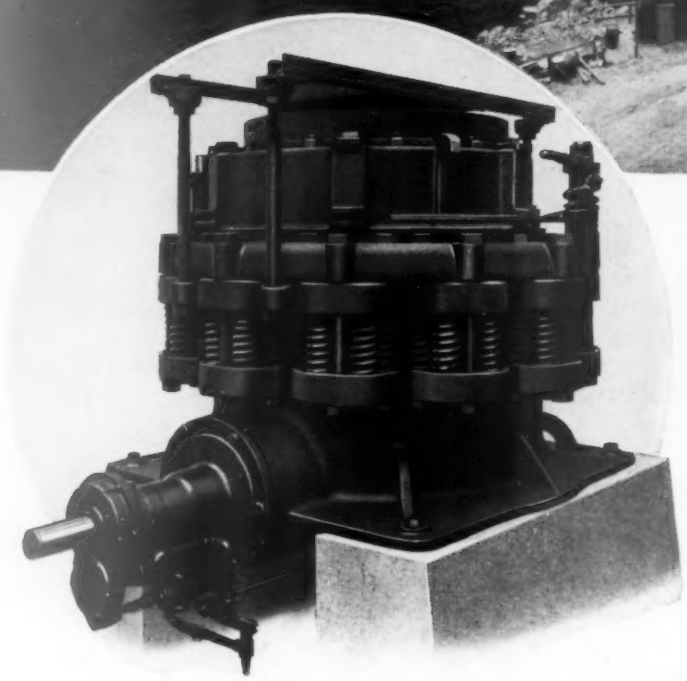
DORR

RESEARCH ENGINEERING EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE

Fine Crushing At Fontana Dam





The Fontana Dam operations are served by four Symons Cone Crushers. Two 4¼ foot standard cones take the oversize from a screen with 6 x 7½ inch openings and operate at a 1½ inch setting. These crushers are followed by two 4 foot Short Head Cones set for about ½ inch.

In supplying crushed materials required for the Fontana Dam of the Tennessee Valley Authority, finer sizes are being made by Symons Cone Crushers, as has been the case on so many of the larger construction projects. With a rated capacity of 800 tons an hour, this is one of the largest crushed stone plants in existence. Where big capacity of fine product is required, Symons Cones can be depended upon to deliver in quantity and at a cost which cannot be equalled by any other type of crushing equipment.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN
NEW YORK · LOS ANGELES · LONDON · TORONTO

NORDBERG MACHINERY

SYMONS CONE CRUSHERS

. . . and WHAT a foxhole !

You're right, soldier, it *is* a foxhole. Not the kind you dug in Tunisia or Guadalcanal — but just as important in conducting offensive measures against the enemy.

In this kind of foxhole, vast beds of coal and ore are uncovered at depths of 100 feet and more — to permit mining from the surface with modern excavators — to do it faster, with fewer men — without tedious hand methods.

These huge open pits are a tribute to America's mass production methods — to the big electric shovels that dig day and night to feed smelters, blast furnaces, cement mills and other vital industries with the raw materials we need to win.

Yes, they're far behind the lines of actual combat. But you can count on the P&H Electric Shovels to stay in the fight until the last shot has been fired. Then, they'll resume their peacetime jobs to help build the better world of the future.

P&H

Overhead Cranes • Electric Hoists
Excavators • Welding Positioners
Arc Welders • Welding Electrodes

4451 West National Avenue
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CORPORATION

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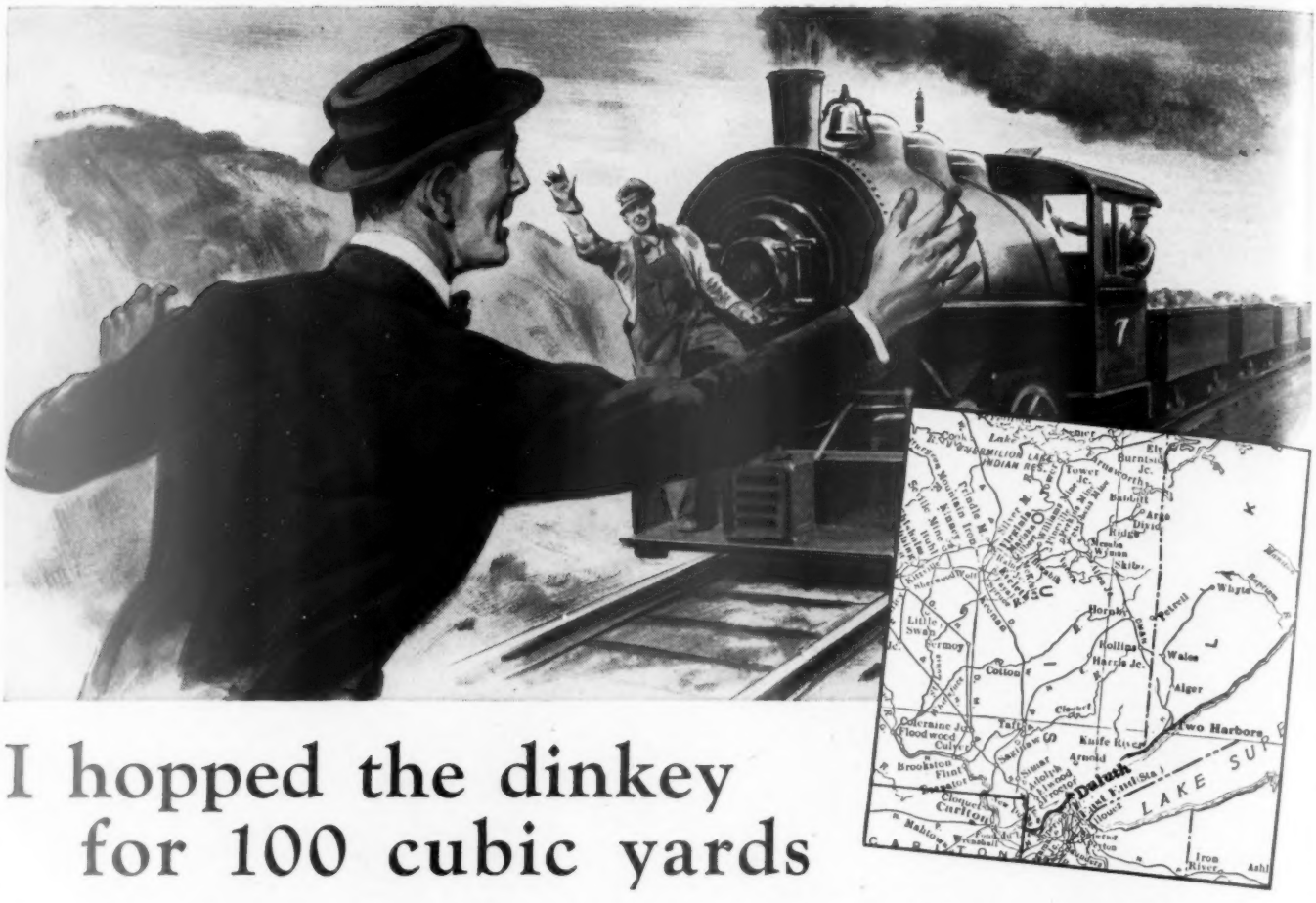


I hopped the dinkey for 100 cubic yards

"We'll ride the dinkey," said Smith, as he stepped on the track.

It was May, 1917. We had just entered the war, and everything was *rush*. Mines were hiring men and begging equipment. Cordeau was taking hold, and I was trying to cover mines and quarries in one-night stands. That morning, Smith and I were on the way to his iron pit.

Used three-inch wagon drill . . .

Hopping a dinkey engine is one trick I wouldn't try today. You straddled the rail, facing the locomotive as it came charging down. At the right moment you lifted your foot and landed on the front step, smack against the pilot — with the wind knocked out of you. If you missed . . .

We didn't miss. We hung on and rode the two miles to the pit — one of the prettiest layouts I'd ever seen. Smith was getting an excellent grade of iron ore, cutting back on benches and scooping it up with shovels alongside his narrow gauge right-of-way. He pointed ahead to where a whole section of track was covered with overburden of rock and earth, around which a gang was working with jack hammers.

"That's your big blast," he said, disgustedly. "Dumped a mountain of big rock on my railroad and set me back three days' production!"

"Got a blueprint?" I asked.

"Blueprint? Hell, no!" he snorted. "We just went ahead and sank our holes — fifty of 'em in two rows along the top. Used three-inch wagon drill about 25 feet deep and spaced 9 feet apart."

"How did you connect up?"

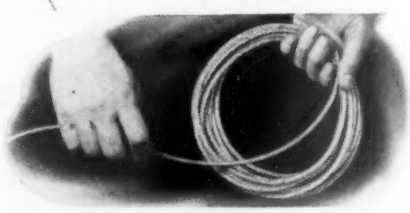
"We ran a line of Cordeau all along each row," said Smith, "and put an electric cap at the end of each line. Shot 'em simultaneously with a battery — and look at it!"

"Yes, — I see," I said. "We advocate *one* trunk line and *one* cap for a layout like this. Connect the Cordeau so as to shoot the front row *first*, and then the back row. Cordeau is plenty fast, but this interval gives time enough to shoot the front row a split second ahead of the back row, which relieves the burden and results in better fragmentation.

"Try Cordeau again with a *real* Cordeau hook-up and I think you'll make a lot of money."

That was a long time ago. His dinkey engine is somewhere in Mexico now, and he's hauling ore with Diesels on standard gauge. His pit looks like the Grand Canyon! And every yard since 1917 has been shot with our detonating fuse: Cordeau up to 1938, when he shifted to the new improved Primacord.

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut



PRIMACORD·BICKFORD
Detonating Fuse
Also Makers of Ensign-Bickford Safety Fuse — since 1836

ARMY E NAVY

Exide
HEAVY DUTY BATTERIES

Plenty of "GO" at 20 below!

Sub-zero weather does not phase an Exide. These rugged batteries are scientifically constructed to give peak performance in any climate. And in "Off-the-highway" operations, that's mighty important. For, without question, the efficient operation of snowplows or shovels, compressors or cranes, tractors or trucks depends upon starting equipment that is built to take it.

Day after day, regardless of the temperature, you can depend on your Exides for faster cranking. They are durable and dependable, built for long-life, and simple to maintain.

BUY TO LAST
SAVE TO WIN

Write for a FREE copy of the Exide catalogue on Heavy-Duty Batteries. It tells you what to order, how to order, and how to get the most from your Exide Heavy-Duty Batteries. Write today!

THE ELECTRIC STORAGE BATTERY CO., Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

Setting new Records!

Record No. 1: Twin-Unit Plant, shown in the photographs, with 10″ x 36″ jaw crusher, and 40″ x 22″ roll crusher. Airport construction job in California, requiring both 1¼″ minus and 2½″ minus. Production for entire job averaged 500 tons per hour, crushing 25%.

Record No. 2: Quarry work in California. Twin Unit Plant with 21″ x 38″ jaw crusher, and 40″ x 22″ roll crusher. Averaging 400 to 450 tons per hour, to 2″ minus, crushing 50%.

Production records like these — never before approached in a portable plant to our knowledge—explain why more and more operators are building their plans for wider and more profitable operations around the Austin-Western Twin Unit Plant. We'll be glad to tell you the whole story of this and other crushing plants. THE AUSTIN-WESTERN COMPANY, Aurora, Illinois.

BUILDERS OF **Austin Western** ROAD MACHINERY

SINCE 1859

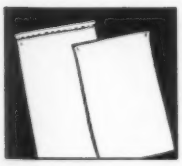
★
Machines like this for applying Rip-Cord closures to cotton valve cement bags enable one operator to sew and bundle over 1000 bags an hour. The conveyor, synchronized with the sewing speed, carries bags through the machine and automatically stacks and counts them.

Bemis Rip-Cord Closure makes cotton cement bags go further

EXPERIENCE of cement manufacturers shows they get greater mileage from cotton bags after adopting the Bemis Rip-Cord Closure. In many cases the number of trips per bag has been increased from 8 to 12... an increase of 50% in the life of the bag.

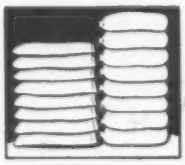
Rip-Cord-closed bags deliver this extra service to cement manufacturers because neither closing nor opening damages the fabric.

More trips per bag is only one of the economies of using the Rip-Cord Closure. The original cost of bags is less than when made for wire tie closing because bags can be made smaller and without hems. Efficiency in filling is stepped up. There are added savings in handling... in storage and shipping space. Mail the coupon today for complete details on the efficient, economical Bemis Rip-Cord Closure.

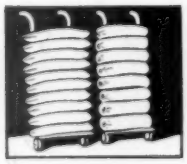


Saves Money! With Rip-Cord Closure bags can be made smaller and without hems and their life is increased, thus reducing costs.

Saves Bags! The Rip-Cord Closure is so easy to open—no tools are required and workmen never need damage bags to remove contents.



Saves Space! Bags closed with Rip-Cord are uniform in size and shape, saving shipping and storage space. Both stacks contain same amount.



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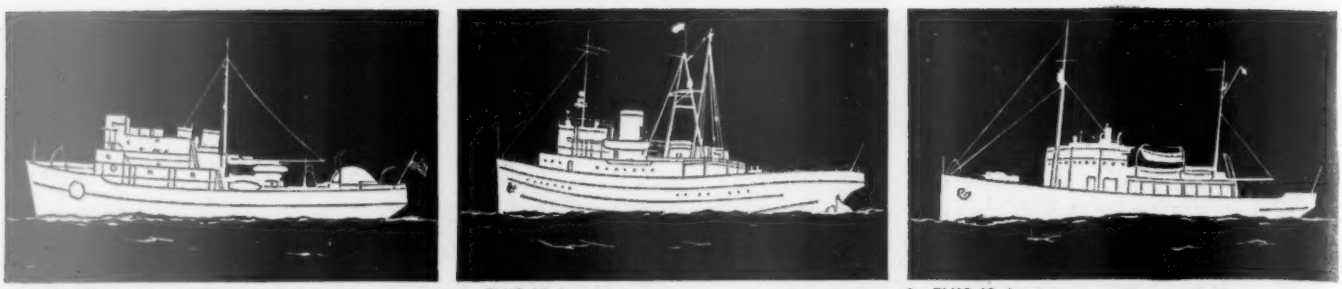
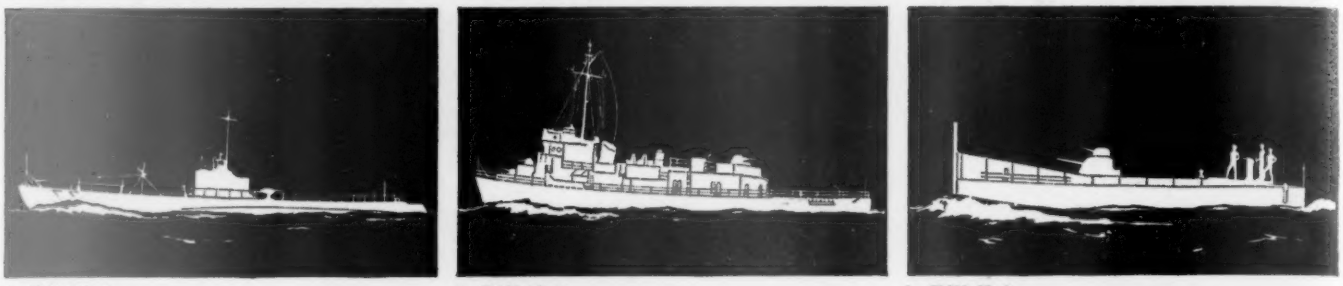
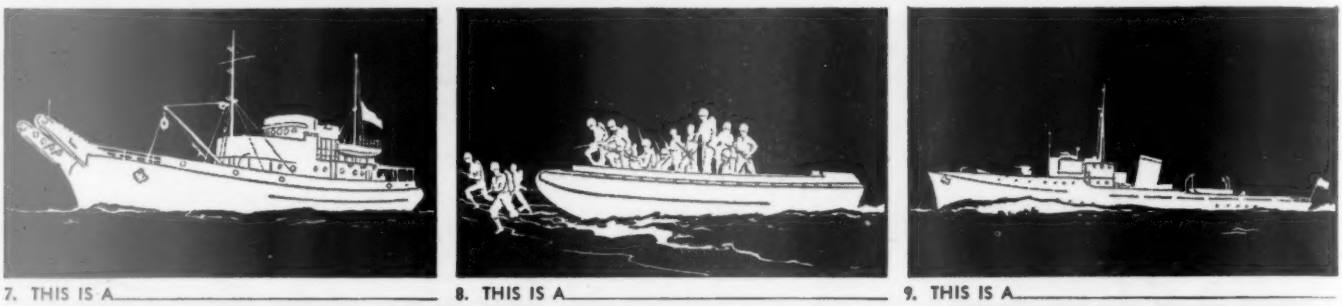


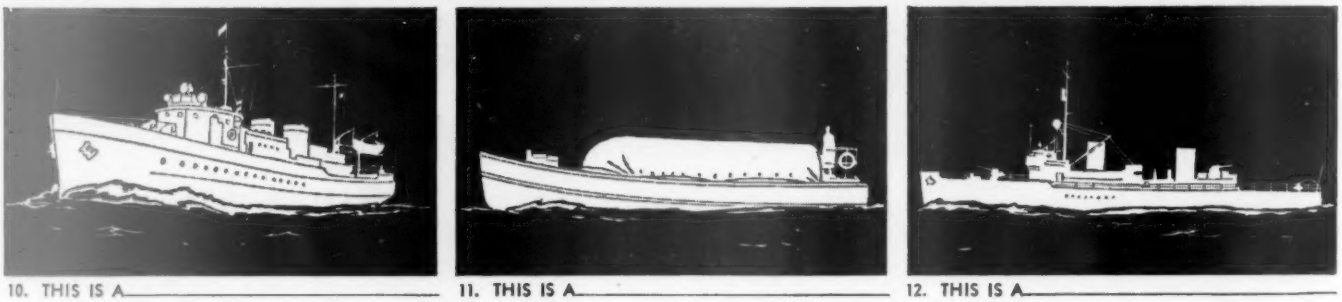
1. THIS IS A_____ 2. THIS IS A_____ 3. THIS IS A_____



4. THIS IS A_____ 5. THIS IS A_____ 6. THIS IS A_____



7. THIS IS A_____ 8. THIS IS A_____ 9. THIS IS A_____



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. . . YOUR 4TH WAR LOAN QUOTA

WHETHER your plant meets its quota, or fails, lies largely in *your* hands. Your leadership can put it over—but if you haven't already got a smooth running, hard hitting War Loan Organization at work in your plant, there's not a minute to lose.

Take over the active direction of this drive to meet —*and break*—your plant's quota. And see to it that every one of your associates, from plant superintendent to foreman, goes all-out for Victory!

To meet your plant's quota means that you'll have to hold your present Pay-Roll Deduction Plan payments at their all-time high—plus such additional amounts as your local War Finance Committee has assigned to you. In most cases this will mean the sale of *at least* one $100 bond per worker. It means having a fast-cracking sales organization, geared to reach personally and effectively every individual in your plant. And it means hammering right along until you've reached a 100% record in those *extra* $100 —or better—bonds!

And while you're at it, now's a good time to check those special cases—*growing more numerous every day*—where increased *family* incomes make possible, *and imperative,* far greater than usual investment through your plant's Pay-Roll Deduction Plan. Indeed, so common are the cases of two, three, or even more, wage-earners in a single family, that you'll do well to forget having ever heard of '10%' as a reasonable investment. Why, for thousands of these 'multiple-income' families 10% or 15% represents but a paltry fraction of an investment which should be running at 25%, 50%, or more!

After the way you've gone at your wartime *production* quotas—and topped them every time—you're certainly not going to let anything stand in the way of your plant's breaking its quota for the 4th War Loan! Particularly since all you are being asked to do is to sell your own people the finest investment in the world—*their own share in Victory!*

LET'S ALL BACK THE ATTACK!

This space contributed to Victory by

PIT & QUARRY

This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council.

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goes all out

FOR WIN-THE-WAR CONSTRUCTION

Telsmith Jaw Crusher

Telsmith Sand Tanks

Telsmith Gyrasphere

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Minus 1½″ from the scalping screen goes via a 24″ x 186′6″ finished product conveyor to a 5′ x 12′ Telsmith 2-Deck Pulsator for washing and sizing. Sand is flumed to two No. 8 Telsmith Sand Tanks on a tower independent of main plant. The two sizes of gravel are deposited in two 20′ diam. concrete-block silo bins, fitted with bin gates for loading into trucks.

Why do so many operators with war construction jobs depend on Telsmith? Because Telsmith equipment can be pushed to *top speed* and *will produce*. Telsmith Engineers' plant planning is sound. Telsmith Service is fast. *Get Bulletin G-15.* G-10

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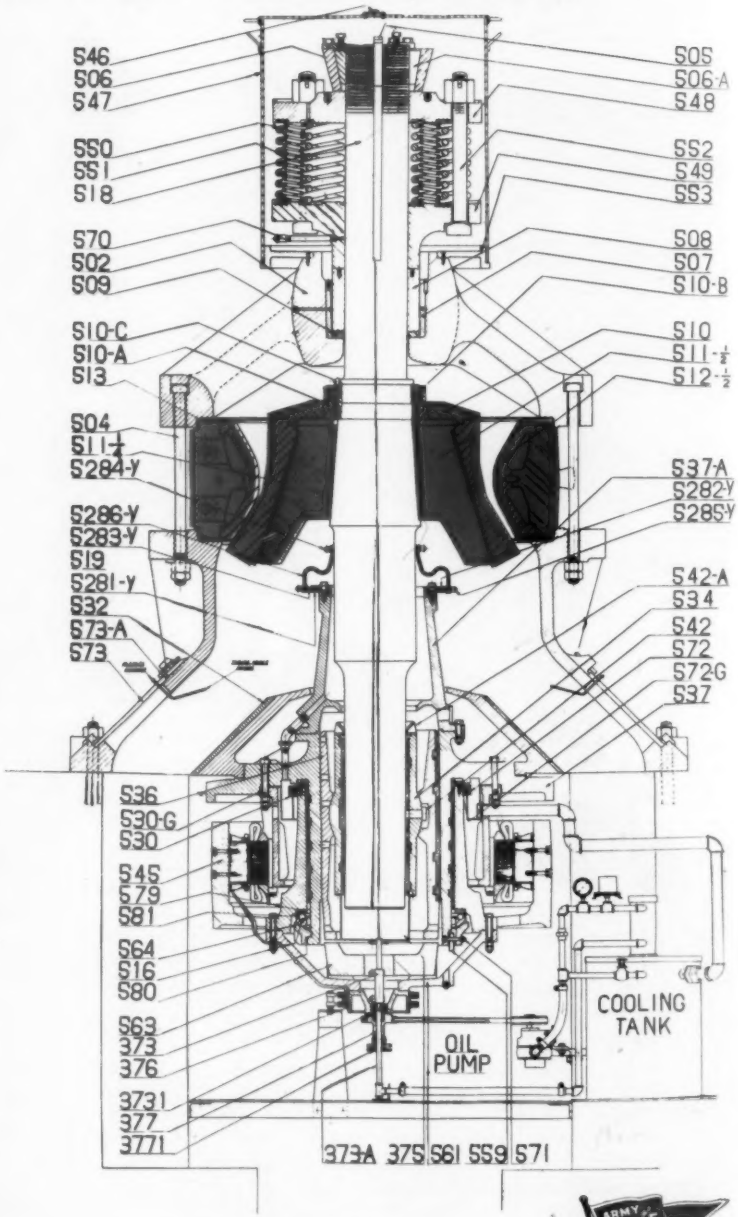
The mantle, like the concave, is made of fine manganese steel. It is securely fastened to the crusher head by a simple, automatic, self-locking device. With this patented method, it requires no thread to be cut in the shaft, which would thus weaken the shaft. On the contrary, this device adds strength to the shaft.



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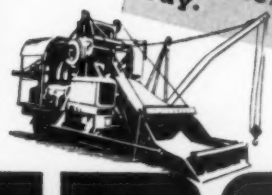

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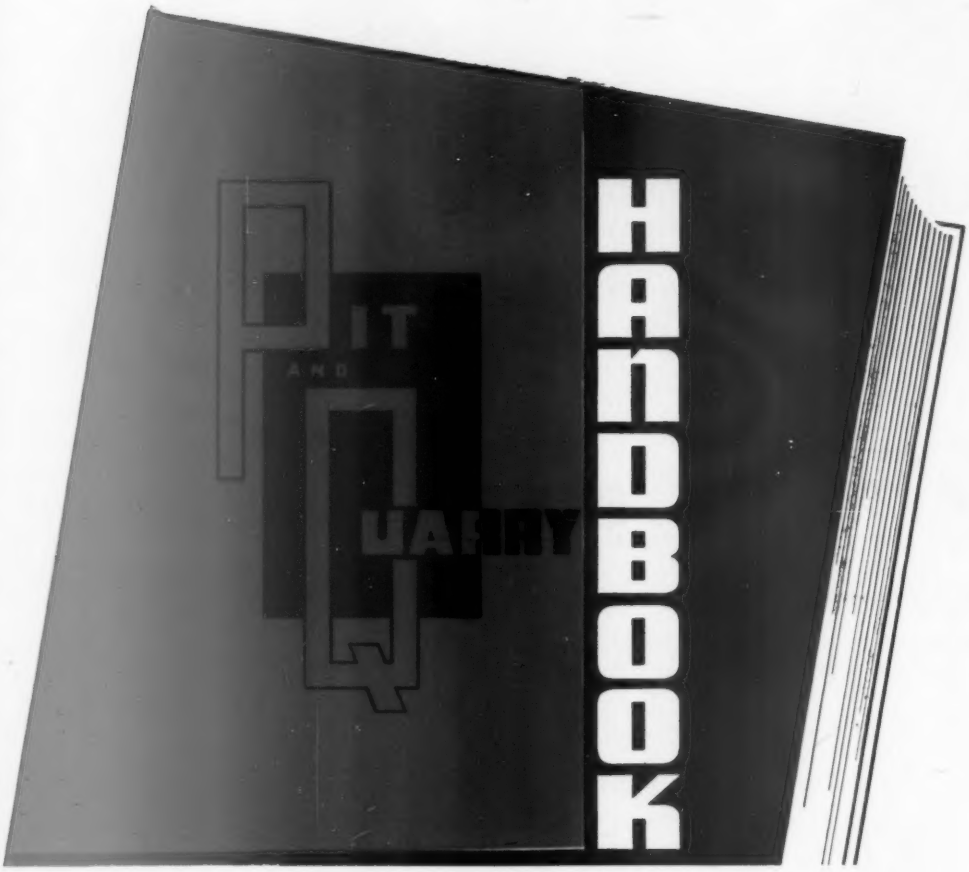

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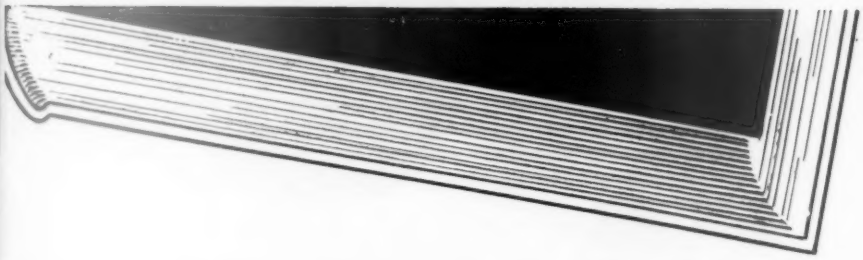

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PIT AND QUARRY

Vol. 36 FEBRUARY, 1944 No. 8

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50% Am. Dyn.	216	10.50	Dolomite 3	260	9.15	1.35	270.00
50% Am. Dyn.	216	10.50	Dolomite 2	240	9.90	.60	120.00
40% Am. Dyn.	216	10.00	Dolomite 4	280	8.50	1.50	300.00
40% Am. Dyn.	216	10.00	Dolomite 3	260	9.15	.85	170.00
30% Am. Dyn.	216	9.85	Dolomite 5	306	7.75	2.10	420.00
30% Am. Dyn.	216	9.85	Dolomite 4	280	8.50	1.35	270.00
20% Am. Dyn.	216	9.70	Dolomite 6	330	7.20	2.50	500.00
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EDITORIAL

Smoothing the Path for Business

IT is with the fullest appreciation of the splendid work being done by certain trade associations in the building of their convention programs that we say that we believe the majority of them are characterized by a great lack—the absence of speakers representing contrary points of view. With the development of the open-forum type of discussion, conventions are taking on more and more of the spirit and democratic feeling of the old town meeting, wherein the expression of opinion was in principle entirely free and wherein a man's ignorance of a subject was no bar to his speaking openly on it. After all, opinions are as much the expression of emotional feeling as of careful reasoning and may be provocative of as much thoughtful discussion and as much reasoned conclusion as a meticulously planned logical exposition.

Since most of us are better acquainted with our own opinions than with those of others, we listen most attentatively and with the highest degree of approval to speakers whose views either coincide with our own or run nearly parallel. There is a large element of mental laziness involved in our adoption of this attitude, but the chief motivating factor seems to be our satisfaction with the things we know and understand and our reluctance to listen to or to attempt to understand ideas that are new to us. There is nothing original in this observation, since the tendency has been evident throughout the extent of recorded human history and constitutes the framework within which most of our rituals, habits and beliefs have been consolidated. Abhorrence of change, hesitancy in accepting or even thoughtfully considering what appears to be new, has been a powerful stabilizing factor in human society, yet it has been the greatest obstacle in the path of man's progress.

This willingness to cling to the old and to forego the intellectual satisfactions and practical gains that come from a better understanding of the other man's point of view is evident in convention programs generally. Whenever it is considered prudent to venture beyond the narrow limits of an industry's peculiar problems and invite someone to speak on problems that bother men in all lines of business and in all walks of life, great care is exercised to be sure that the speaker is "safe," which is the same as saying that he should not hold, and certainly must not express, any views that are unorthodox—politically, economically, ethnically or biologically. His views must "go over," which means that they must coincide to as great a degree as possible with those of his listeners. He must be emotional to a greater extent than factual, because to be considered "popular" he must sit down in a burst of deafening applause that expresses more of the emotional content of the audience's reaction than of the intellectual.

Convention program planners would serve their audiences well, in our opinion, if they would provide on each program at least one speaker with a contrary point of view. Understanding between groups of our people who have different economic, political, religious and social interests does not progress faster than it does because in circumstances such as are provided by conventions advantage is not taken of the opportunity to present other opinions than those currently held by the group. Business men are seldom, if ever, known to address groups of workers other than their own employees, and even this has been less common in the last quarter century than it was before. What business man can recall ever having been a member of a business-man audience that was addressed by a laboring man or a union representative? Public servants seldom, if ever, hear an expression of the business man's point of view except when it is uttered in protest against some government ruling or threatened interference with the conduct of his business. Each group, conscious of the values of solidarity and seeking some advantage at the expense of the other, maintains an intellectual and physical isolation that makes common understanding impossible and merely widens the gulfs between them. Instead of realizing the folly and ultimately self-destroying effects of such an "untouchable" attitude, each group makes capital of it, hugs to itself the traditions it has built up, and seeks continually to set itself farther and farther apart from the groups with which it should foster friendly and co-operative relations.

Business men recognize in trade associations an effective means of gaining better understanding of their common problems, mutually-suspicious competitors come to understand that they have more to gain by co-operation than by isolation and mistrust, and their individual problems are found to be shared by others and to be susceptible of solution through concerted action. A similarly intelligent approach should be made toward the solution of those larger problems which will seriously affect the conduct, and even possibly the existence, of any kind of business in the future.

WE feel deeply about this question because the antagonisms that have been allowed to grow between business, labor and government will increase at an even faster rate unless checked by sincere attempts at understanding. The more each group asserts its rights and claims special privileges, the more conscious it becomes of its group interests, and the more self-assertive and exclusive is its attitude toward others. There is no better place for the softening of these hatreds, there is no better opportunity for promoting good will and checking the growth of economic and political classes, than the floor of business men's conventions, and we hope that the intelligence of men in business will enable them to be the first to realize the value of such a move in the direction of better understanding and more helpful co-operation between management, labor and government.

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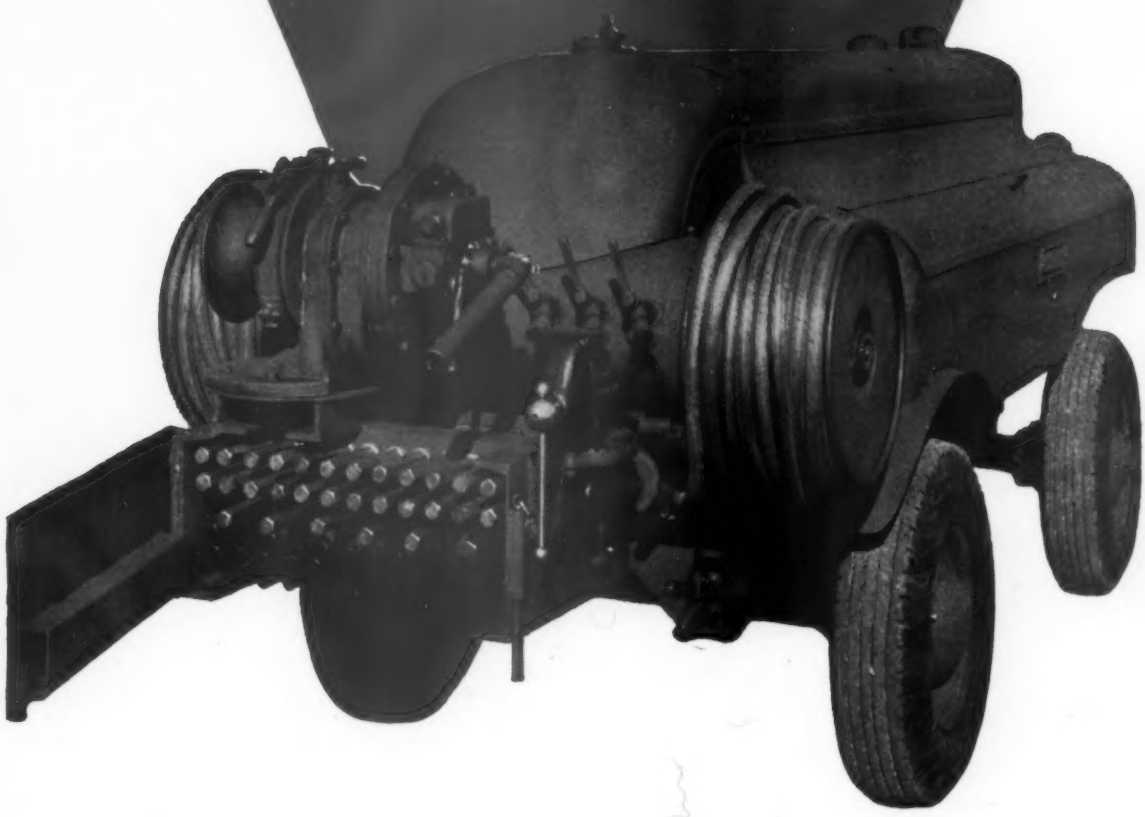
COMPRESSOR & TOOLS UNIT



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A Model 105 Schramm Compressor with special racks and tool boxes with fixed locations for each tool and accessory, so that most any compressor requirement that arises can be met and handled.

Equipment includes: Double hose reels, live air type, each equipped with three 50 ft. lengths of 3/4" air hose. Air receiver with three extra outlets, equipped with quick action valves, hose couplings and 3 1/2" vise for flat or pipe work, on swivel base. Tools recommended depend entirely on user's requirements and the ability of tool manufacturers to furnish them under existing conditions.

Schramm Model 105 is the answer to manpower shortage and the nuisance of miscellaneous purchases. Your priority assures quick delivery. So write now for complete details and prices contained in Bulletin C-9.

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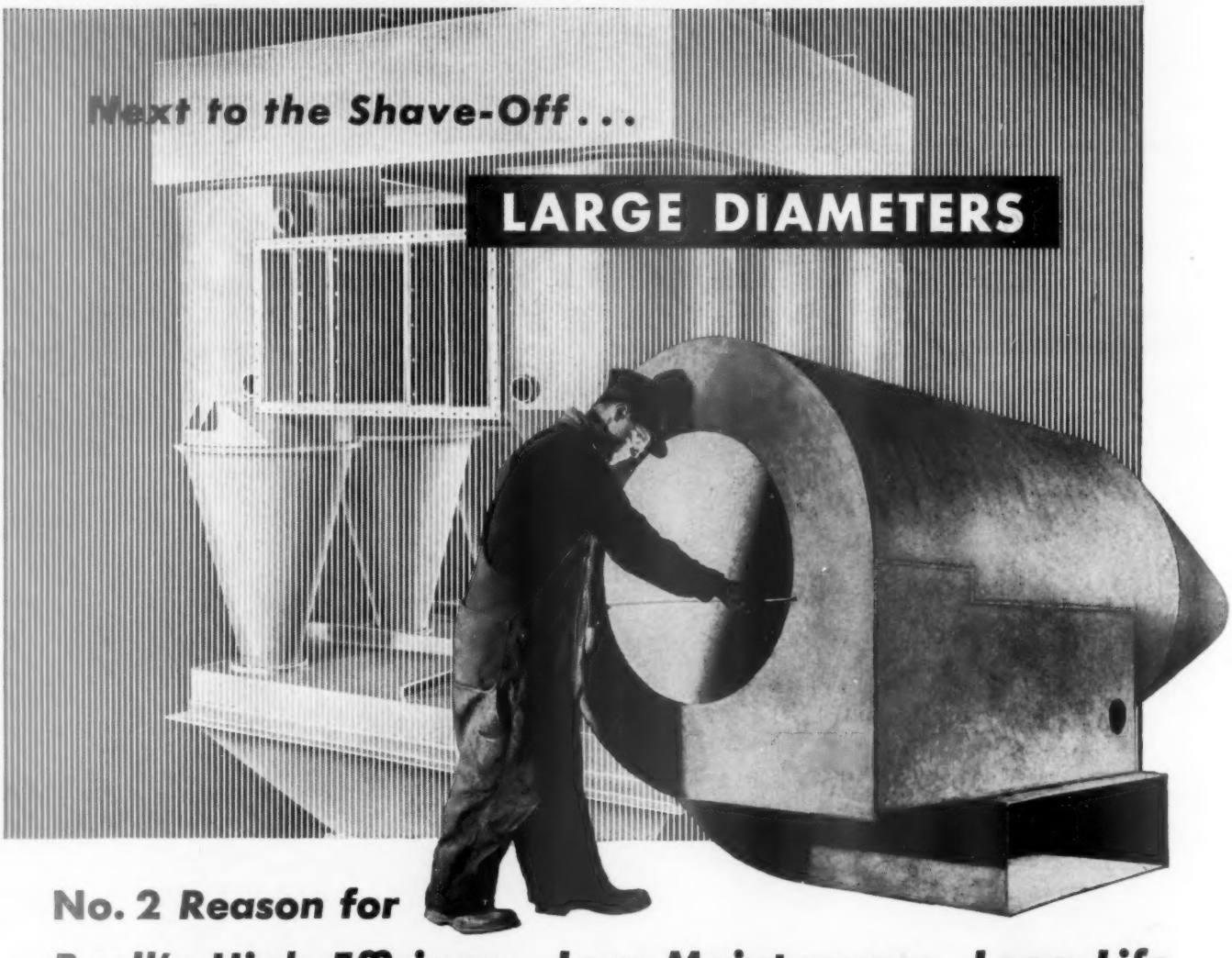

No. 2 Reason for
Buell's High Efficiency, Low Maintenance, Long Life

Because of Buell's exclusive feature—the patented van Tongeren "shave-off"—the cyclones in Buell Dust Recovery Systems do not have to be made with small diameters in order to achieve high recovery efficiency. *On the contrary, diameters of Buell cyclones can be in excess of four feet without loss in efficiency.

These large diameters make possible operation with low centrifugal force and consequent reduction in abrasive wear; and permit construction of extra-thick steel, with large dust outlets, that makes clogging virtually impossible.

All these are prime factors in the trouble-free operation, low maintenance cost, and high efficiency of Buell Dust Recovery Systems—as established from actual records of installations in service for three, four, five or more years.

**Engineers will find convincing proof of this in Buell's factual, 28-page book: "The van Tongeren System of Industrial Dust Recovery." To obtain a copy, simply write requesting Bulletin G-842.*

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DUST RECOVERY SYSTEMS

BUELL FEATURES	RESULT IN	PRODUCE
SHAVE-OFF LARGE DIAMETERS	HIGH COLLECTION EFFICIENCY	GREATER RECOVERY
EXTRA-THICK METAL	LESS FAN BLADE WEAR	LOW MAINTENANCE
LARGE OUTLETS	LOW DRAFT LOSS	LOW OPERATING COST*
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CORRECTLY DESIGNED HOPPERS	HIGH TEMPERATURE RESISTANCE	NO CLOGGING
SPLIT-DUCT MANIFOLDS	UNLIMITED CAPACITY	
	NO MOVING PARTS	
	FREE DUST FLOW	

DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"

PIT AND QUARRY

CHICAGO FEBRUARY, 1944

Wisconsin Silica Plant Destroyed; Loss Is $25,000

The Silicate Sand Company at Hanover, Wisconsin, was destroyed by a fire of unknown origin January 6. The loss was estimated at $25,000.

The plant, owned by Prof. Monta E. Wing, head of the department of geology at Beloit College, Beloit, Wisconsin, was engaged in processing the sand and shipping it to various cities in the middle west.

Prof. Wing plans to re-build the plant. While the necessary equipment may be hard to obtain, he points out that the plant has a high priority rating and that efforts to get replacements will be made as early as possible.

Ideal Cement Company Announces Changes

The Ideal Cement Company, Denver, announces the following personnel changes among its subsidiary companies:

H. B. Roberts has been appointed assistant sales manager, Union Portland Cement Company, Salt Lake City. He was formerly assistant sales manager, Oklahoma Portland Cement Company, Tulsa.

J. M. Crowell appointed assistant sales manager, Oklahoma Portland Cement Company, Tulsa; formerly assistant sales manager, Arkansas Portland Cement Company, Little Rock.

Wallace J. Hunter is appointed sales manager, Nebraska Cement Company, Omaha; formerly assistant sales manager.

Construction Volume in 1943 Down 60 Per Cent.

Construction contracts awarded during the year 1943 totaled $3,273,990,000 in the 37 eastern states, according to F. W. Dodge Corporation. This was a drop of 60 per cent. from the 1942 record volume of $8,255,061,000 and comparable with the 1938-1939 level.

The decline from 1942 reflected the passing of the peak in construction for war purposes and the continuance of restrictions on civilian construction ruled non-essential.

Cass City Gravel Pit Purchased by County

The board of supervisors of Tuscola County, Michigan, have purchased the plant and pit of the Cass City Sand & Gravel Company for $20,000.

The county's highway department will operate the newly-acquired plant, using the output for the construction and maintenance of local roads and streets.

The Freeport Sulphur Company has put a crew of 28 men to work drilling for sulphur near Brainsburg, Mississippi. R. R. Jones is the supervisor of the crew.

Coming Events

February 15-17, 1944—Chicago. Annual convention, National Concrete Masonry Association, Sherman Hotel.

February 20-24, 1944—New York. Meeting, American Institute of Mining & Metallurgical Engineers, Hotel Waldorf-Astoria.

February 22, 1944—Springfield, Ill. Annual convention, Midwest Agricultural Limestone Institute, Abraham Lincoln Hotel.

February 28-March 3, 1944—Cincinnati. Spring meeting, American Society for Testing Materials, Netherland Plaza Hotel.

Arizona Asbestos Industry to Get Processing Plant

An asbestos-purchasing station and custom processing plant is to be built by the Defense Plant Corporation at Globe, Arizona, for the Pine Top Asbestos Company, according to advices from the Arizona Department of Mineral Resources.

The project will entail an initial expenditure of $150,000, funds being provided by the Reconstruction Finance Corporation. The entire output of the plant will be purchased by Asbestos, Ltd., of New York City.

"The securing of an asbestos plant for Arizona is a boon to the Globe area," stated J. S. Coupal, director of the Department of Mineral Resources. "While it fulfills a war necessity, it is something that the Arizona asbestos industry has needed for many years and it is a project that definitely will not be a "war baby" as it will continue after the war.

"It is the first time that Arizona asbestos producers have had a local market and the opportunity for the kind of grading of their product which will bring the highest possible prices," continued Mr. Coupal. "The department has been working on the project for over a year and a half and is highly gratified at its successful conclusion."

New Arkansas Plant in Full Production

The Silica Products Company, operating a large plant at Guion, Arkansas, is now in full operation. The original plant was destroyed by fire over a year ago. Mertie Dunkin of Guion is in charge of operation. Sand is mined in large tunnels, a method which has proven more satisfactory than the old quarry method.

The company also operates a plant at Everton in Boone County.

FDR Submits Plan for 34,000-Mile Highway Network

President Roosevelt on January 12 submitted to Congress a proposal for development of a national highway system of approximately 34,000 miles to provide a network of modern roads "essential to the future economic welfare and defense of the nation."

It was estimated the program would cost $750,000,000 annually, "over a reasonable period of years."

The president transmitted to the legislators a report by a national interregional highway committee which he appointed in April, 1941, to look into the need for a limited system of national highways and the possibility of using man power and industrial capacity which will be available at the end of the war.

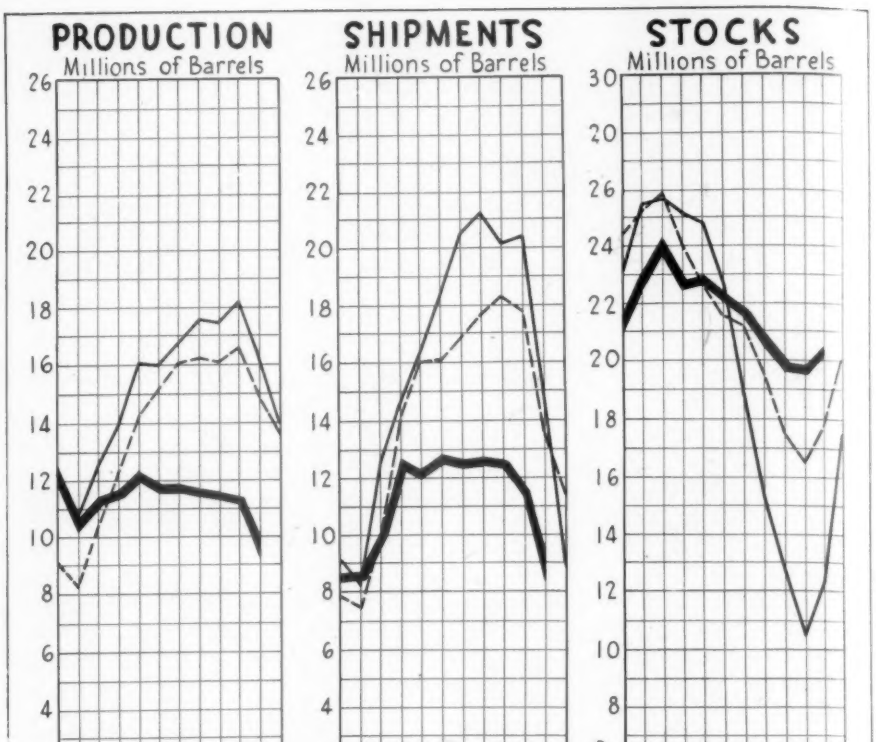
"The report recommends," he informed congress, "the designation and improvement to high standards of a national system of rural and urban highways totaling approximately 34,000 miles and interconnecting the principal geographic regions of the country."

Mr. Roosevelt did not say how much of the 34,000 miles represented new construction and how much represented improvement of existing roads. He did assert the system follows, in general, the routes of existing federal-aid highways.

He said early action by congress in authorizing joint designation by federal and state governments of a national system of interregional highways was desirable so as to facilitate acquisition of land, the drafting of detailed plans, and other preliminary work.

The interregional committee estimated that upwards of 20 years would be required to complete the highway system and suggested the cost be borne by the federal, state, and possibly local governmental agencies on a share basis to be determined by the affected agencies.

The report said the construction would provide direct and indirect employment for 2,000,000 men after the war.



The Portland-cement industry in November, 1943, produced 9,218,000 barrels, shipped 8,405,000 barrels, and had in stock at the end of the month 20,386,000 barrels of cement, according to figures released by the Bureau of Mines. This was a decline of 43 per cent. for both production and shipments from the corresponding month of 1942.

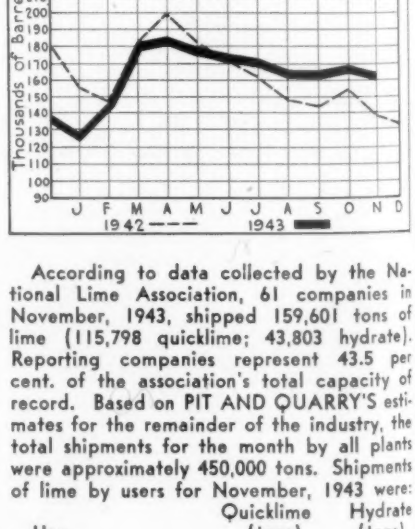
Illinois Plant Adds Diesel Locomotive

The Lincoln Sand & Gravel Company has placed a 44-ton Diesel locomotive in service at its plant, replacing an old steam locomotive which had seen service for many years. The Diesel was purchased from the Morrel Packing Company at Ottumwa, Iowa.

Alfred Warner Dies in North African Hospital

Staff Sergeant Alfred D. Warner III, son of A. D. Warner, Jr., vice-president and treasurer of the Warner Company, Philadelphia, died recently in a general hospital in North Africa.

He had been employed at the Bellefonte Division of the company for about three years before he enlisted in the Army Air Force nearly two years ago. In North Africa and during the Sicilian and Italian campaigns he was a member of the 99th Bombardment Squadron. Death was due to leukemia following several earlier attacks of malaria.

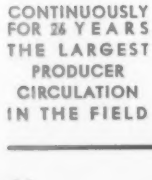

MONTHLY LIME SHIPMENTS, 1942-1943
AS REPORTED TO NATIONAL LIME ASSOCIATION
Thousands of Barrels
J F M A M J J A S O N D
1942
1943

According to data collected by the National Lime Association, 61 companies in November, 1943, shipped 159,601 tons of lime (115,798 quicklime; 43,803 hydrate). Reporting companies represent 43.5 per cent. of the association's total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 450,000 tons. Shipments of lime by users for November, 1943 were:

Use	Quicklime (tons)	Hydrate (tons)
Agriculture	3,801	10,910
Building	7,493	12,525
Cremical	104,504	20,368
Total	115,798	43,803

Paid Circulation of Pit & Quarry Among Nonmetallic - Mineral Producers In Recent Years:

1942	(November)	6,650
	(May)	6,513
1941	(November	6,179
	(May)	5,945
1940	(November)	5,307
	(May)	5,037
1939	(November)	4,641
	(May)	4,617
1938	(November)	4,496
	(May)	4,366
1937	(November)	3,971
	(May)	3,772
1936	(November)	3,654



CONTINUOUSLY FOR 26 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

82% increase in 6 Years

WPB Eases Ban on Cross-Hauling of Portland Cement

Changes in Portland-cement shipping zones announced January 12 by the W.P.B. in revising Schedule 1 of General Haulage Conservation Order "to permit freer flow of this material in territories now deficient in supply and to adjust discrepancies" were criticized by cement manufacturers on the grounds that the revisions were inadequate and that in any case there were no deficiencies in supply.

Since the plan became effective on September 25, 1943, the cement industry has been seeking to obtain its modification or withdrawal. It has been pointed out to W.P.B. that the zoning plan as applied to cement was not only unnecessarily restrictive and would result in the destruction of valuable customer relationships but that it actually would produce no savings in transportation.

The industry's views were supported by the Truman Committee, which held in its report on transportation that the cross-hauling ban aimed at through zoning was cumbersome and artificial. The Truman report stated that it was impossible, on any evidence available to the committee, "to establish that the cross-haulage order issued with respect to cement will substantially reduce the equipment needs of the railroads." The report described some restrictions as "absurd" and "ridiculous."

With the industry operating at 35 per cent. of capacity, and with large stocks accumulated at many mills, industry executives pointed out that there was no basis for the W.P.B. statement that the revisions would relieve any "deficiencies in supply." Some mills have closed down entirely, owing to the decline in building operations.

Estimates of the War Production Board for building requirements for 1944 show that the cement industry will operate at 50 per cent. of capacity or less, with an estimated need for only 60,000,000 barrels of cement for domestic use and from 6,000,000 to 10,000,000 barrels for export. With operations at such depressed levels, savings in transportation would be minor, even if the haulage conservation order could be made an effective instrument, it was pointed out.

Cement manufacturers have pointed out that the conservation order was discriminatory, since cement is the only commodity hauled in box cars to be affected by a zoning order. While the board originally stated that it would add other commodities to the list, it has failed to do so.

Walter Duff, Stone Producer, Is Dead

Walter W. Duff, 55, prominent crushed-stone producer of New Castle, Pennsylvania, died suddenly of a cerebral hemorrhage on January 21 in Florida. He became associated with the Lake Erie Lime Stone Company and the Union Limestone Company many years ago and later helped organize the New Castle Lime & Stone Company of which he was president and general manager at the time of his death.

He was a member of the National Crushed Stone Association and of the Pennsylvania Stone Producers Association, having served a term as president of the state group. He aided in forming the All Weather Highway Association, an organization devoted to the building of paved roads in western Pennsylvania and eastern Ohio, having been president of this organization for a number of years.

Connecticut Plant Destroyed by Fire

Fire of undetermined origin practically destroyed the plant of the Seymour Sand & Stone Company at Seymour, Connecticut, early on the morning of January 20. The damage is expected to exceed $30,000 according to Charles W. Varian, secretary of the concern.

The plant structure, of timber construction, was quickly swept by the flames with firemen powerless to save it.

"Pat" Yager Succumbs at Owensboro Home

P. A. "Pat" Yager, president of the River Sand & Gravel Company, Owensboro, Kentucky, died suddenly at his home in Owensboro on January 30. He was taken ill while enroute home from New York City, where he had attended the annual convention of the National Sand & Gravel Association.

Mr. Yager was past president of the Kentucky Sand & Gravel Association and a leader in civic and fraternal groups. Surviving are his wife; a son, John A. Yager, serving with the coast guard at Tampa, and a sister, Mrs. Elmer Miler, Owensboro.

United Nations Controls Major Asbestos Sources

The control by the United Nations of all major sources of asbestos has contributed materially to America's war-time building program, according to Donald Tulloch, Jr., manager of the Asbestos Cement Products Association.

"Millions of feet of asbestos building products have gone into the construction of our camps, cantonments and factories," Mr. Tulloch reports. "In addition to providing fireproof and weatherproof protection for fighters and workers, the availability of the mineral has saved vast quantities of lumber and other critical materials.

"The supply of asbestos cement products, moreover, is helping to make it possible for farmers to construct needed buildings and for home owners to keep their dwellings in good repair."

Before the war, Germany and Japan were large users of asbestos, but they depended almost entirely upon imports to fill their needs. Germany obtained most of its asbestos from Russia. The Russian mines deep in the Urals, were safe from the German invasion. Japan got most of its raw asbestos from Canada, Russia and South Africa.

Three of the four large asbestos-producing countries of the world—Canada, Rhodesia, and the Union of South Africa—are in the British Empire, which also controls moderately important deposits in Cyprus and Australia and small deposits in other countries. The other large producer is Russia. The United States produces some asbestos but the amount is small considering that it is the world's largest user.

The only deposits of importance not controlled by the United Nations are those in northern Italy and Finland. In both countries, however, the domestic consumption in pre-war years far exceeded the production.

Batesville Plant Adds Crusher in Quarry

The Batesville White Lime Company, operating a lime and crushed stone plant at Limedale, Arkansas, is furnishing several hundred tons of lime a day to the aluminum plant at Bauxite, Arkansas.

In order to take care of the increased demand, the company recently installed a new crushing plant in its quarry.

Quarry in Kansas Yields 300 Tons of Scrap Metals

The Howard Henry Quarries, operators of a stationary crushed-stone plant at Tecumseh, Kansas, and several portable plants was forced to give up approximately 300 tons of scrap metals accumulated on one of its properties recently, following its requisitioning by the War Production Board in the name of the Metals Reserve Company recently.

Seizure of the scrap followed 14 months of negotiation by the Kansas State Salvage Committee. A tractor, crushing equipment and a few other pieces of machinery which were not classified as salvage, were exempted by the WPB.

In making the seizure, Thomas F. Knight, a Metals Reserve Company official declared: "We've been trying to shake this fellow loose ever since October, 1942. Lately he wouldn't even let our men come on the place."

But Howard Henry, head of the concern, declared he was not hoarding scrap. "I'm as patriotic as anyone," he said. "I know the government needs junk and I've sold some. I'll sell some more. But a lot of what you see here is not salvage—it's good machinery, in spite of what junk dealers and others say. Give me men and I'll get the machinery going—what I want to do is to farm, and crush rock."

The company has engaged extensively in producing crushed stone for war projects in Kansas recently. Among its important jobs was supplying the stone for the big Topeka Municipal Airport.

Report Dissolution of Antrim Lime Company

The Antrim Lime Company of Grand Rapids, Michigan, operator of a limestone-crushing and burning plant near Petoskey, Michigan, has been dissolved, according to the Michigan Corporations Commission.

George J. Olsen, 54, Died in California

The many friends and acquaintances of George J. Olsen will be grieved to learn that he passed away with a heart attack on December 21, 1943. He had been with the California Portland Cement Company since August, 1913, and had been superintendent from 1917 to 1940. At the time he died he held the position of industrial adviser.

Mr. Olsen spent almost his entire life in the manufacture of cement. He was born in Illinois in 1889 and had worked at the plants of Marquette Cement Manufacturing Company, LaSalle, Illinois, and the Lehigh Portland Cement Company, Mason City, Iowa, before he went to California. He is survived by his wife, four daughters and two sons.

3 Reardon Companies Effect Consolidation

The combination of three business units headed by William J. Reardon into an organization to be known as Reardon Industries has been announced in Cincinnati.

Mr. Reardon who heads the Reardon Insulation Company, the Reardon Color & Chemical Works, and the Reardon Cement Company said that the combined unit will maintain general offices in Cincinnati. Branches are located in Washington, D. C., Houston, Texas, and New Orleans, La.

The Ocean Ballast Company, also owned by Mr. Reardon which operates a military ship-ballast plant at New Orleans will continue its operations.

Permanente Sets New Production Record

The Permanente Cement Corporation recently shattered its old cement-production record by turning out 20,328 barrels of cement in a 24-hour period. The former record was 18,830 barrels.

Ground for the plant, said to be the largest of its kind in the world, was broken in June, 1939. The first barrel of cement was turned out on the following Christmas day with appropriate ceremonies.

Institute to Promote Wyoming's Resources

The newly-formed Wyoming Natural Resources Institute, to be operated in connection with the University of Wyoming, will be directed by Dr. Henry G. Fisk, it is announced by Dr. J. L. Morrill, president of the university.

Doctor Fisk comes to Wyoming from the Armour Research Foundation, Chicago. He has a doctor's degree from Ohio State University, and spent a year as a ceramic engineer in California, eight years as a petrographer for the Universal Atlas Cement Company, and two as a research chemist for the Calaveras Cement Company.

Fluorspar Company in New Mexico Is Sold to Arizonans

Ownership and management of the Zuni Milling Company, fluorspar producer near Grant, New Mexico, have been taken over by Shattuck Denn Mining Corporation, of Bisbee, Arizona. J. A. Wilcox of Bisbee is manager at the property, and George A. Warner, of Hayden, Arizona, is mine superintendent.

The mine, which has employed 100 men in the past, is opened by two 300-foot shafts. Ore from the mine will be treated in a jig mill at Grants, which will produce metallurgical-grade fluorspar, and in a flotation mill at Las Lunas, New Mexico, where acid-grade spar will be produced. The latter mill was built by Defense Plant Corporation and leased to the Zuni Milling Company. The output of both plants goes to Metals Reserve Company.

Gravel-Plant Employee Dies in Bin Collapse

Roland O. Bennett, 45, an employee of the Indiana Gravel Company, Indianapolis, was killed a few weeks ago when the steel legs supporting a bin under which he was working at the plant collapsed. The bin, 50 feet above the ground, was located alongside the 100-foot mast of the cableway which fed material from the pit to the bin. Fire and police rescue squads labored more than an hour to recover the body from the mass of twisted steel and gravel.

U. S. Gypsum Sells Black Rock Factory

The former Black Rock factory of the United States Gypsum Company in Buffalo, has been sold to Jacob Stovroff, president of the Buffalo Waste Paper Company. The property consists of a three-story building and another smaller building with floor space totaling about 25,000 square feet. The factory had not been operated for several years.

Seitz, Holler Acquire Illinois Quarry Plant

The Sheridan Limestone Company of Sheridan, Illinois has been purchased by Edward Seitz and Howard Holler, both of Mendota, Illinois. Practically all of the output is to be agricultural stone, the new owners have announced.

Post-War Problems

another P AND Q exclusive

NO one can deny the vital importance of present planning for the post-war period. Many officials are fearful, however, of the pitfalls which surround this indulgence at a time when large-scale military operations on the continent have yet to begin.

First of all, the wide publicity given to any news related to post-war planning makes it almost impossible to avoid undue optimism. No one really knows how long the war will last, and any estimates in this sphere, whether from a military or civilian source, are either speculation or just plain wishful thinking. At the same time the uncertainty that surrounds the duration of hostilities against each of our two main enemies makes it imperative that post-war plans be extremely flexible, a characteristic with which planning from Washington has never been too plentifully supplied.

It will be remembered that in the two decades between wars, the Army and Navy, after a good deal of thought and analysis, evolved a rather detailed "Industrial Mobilization Plan" for the rationalization of the nation's resources in case of war. Yet when the time came to expand our production of implements of war, this plan was deemed inadequate and was never put into effect. Its inadequacy was elemental — no provision was made for a state of emergency half-way between peace and war, yet just such an emergency defense program was the need during the 18 months prior to actual M-day.

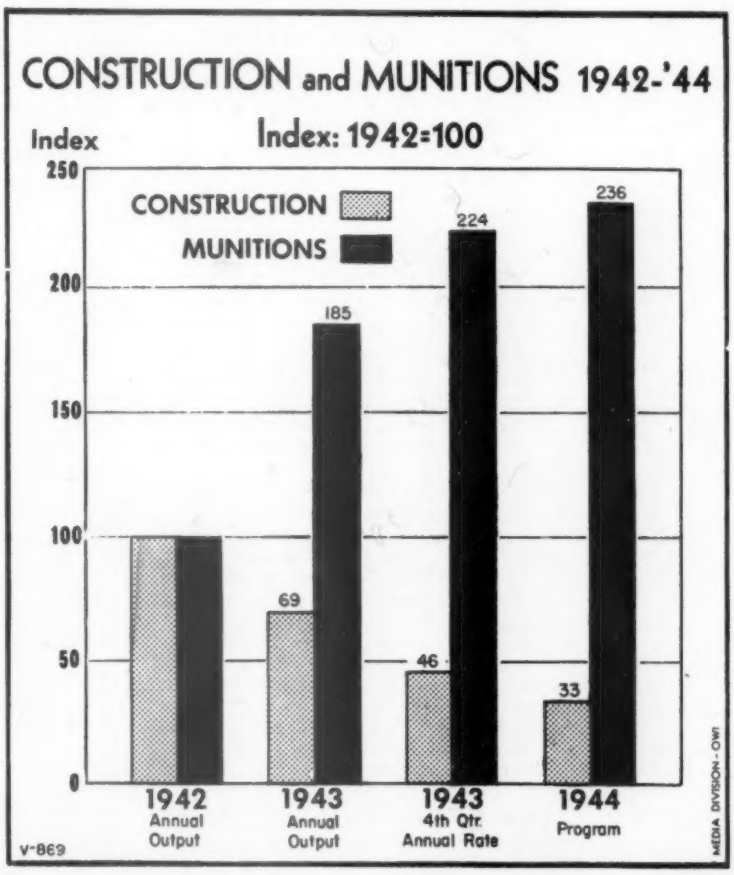
A pointed lesson from this experience may be drawn for the post-war period. Hostilities in Europe may end quickly, or they may not; the Japanese may capitulate soon after the Germans, or may hold out for another year or more. In brief, demobilization may be a rapid or a long drawn-out affair. Whatever the actual developments, we must be prepared with an economic blueprint designed to meet the special needs of the situation.

One of the fundamental concerns of post-war planners is the nature and extent of government control which must be exercised in order to assure the attainment of desired ends. Under the pressure of war-time needs, the government has come into the possession of an "industrial empire" of plant, equipment, and commodities. The national economy has been pushed far closer to its ultimate productive limits than ever before, and immense resources are now being devoted to products for which the need will decline sharply upon the termination or slackening of hostilities.

After the last war, when the problem was similar but not nearly as acute, government controls were lifted very rapidly, with the result that runaway prices and wages brought on serious post-war inflation and culminated in a business depression at the beginning of the 'twenties. The accompaniments to this disaster affected every segment of the economy. Wholesale prices fell 40 per cent., wiping out most of the business reserves accumulated during the war; farm prices were halved; payrolls were cut by one-third; unemployment was widespread; and corporation profits virtually disappeared.

It is becoming clear to Washington planners that this time the stabilization program instituted during the war will have to be extended in some form if the economic transition is to be effected successfully. A brief illustration will suffice to enforce this point. With the elimination of overtime premiums and the conversion of high-wage munitions industries back to lower-wage civilian output, total dollar earnings will be subjected to severe downward pressures. At the same time the pent-up demand for most civilian goods will exert a powerful upward pressure on prices. This means that if the standard of living is to be maintained, either individuals must tap their wartime-accumulated savings, or prices must be kept in line with wages. The former alternative is extremely dangerous, since it not only risks the dissipation of the savings themselves in a temporary buying spree, but also endangers the beneficial psychological effect contributed by a large volume of savings in encouraging the spending of current income. This point was discussed in some detail on this page a few months ago.

If our war-time stabilization program weathers the storms still ahead, we shall end this war in an incomparably better position to work for post-war prosperity than was the case in 1918. A balanced wage-price structure, supported by the legal and administrative machinery necessary to maintain this balance, is one of the principal factors now counted on by many officials in the formulation of plans to build a successful post-war economy.



the VICTORY *Program*

. . . . . AND YOUR BUSINESS

CEMENT SHIPPING ZONES.— Changes in Portland cement shipping zones designed to allow a freer flow of this material in territories now deficient in supply, and to adjust some discrepancies brought to light since the present plan became effective on September 25, 1943, were announced January 12 by the War Production Board.

Revision of Schedule 1 of General Haulage Conservation Order T-1 reduces from 93 to 73 the number of zones outside which cement may be shipped only with WPB authorization.

The new changes followed three months' experience with controlled cement deliveries, put into effect to conserve transportation by curtailing excess and cross hauling. Suggestions of the cement industry with regard to the original restrictions were taken into account in revision of Schedule 1, insofar as they were compatible with the purposes of the order.

Another change in T-1 eliminates the provision calling for advance reporting to WPB of any deliveries of corn syrup to destinations 200 miles or more distant from the point of origin. This is accomplished by deletion of List 2 of the order, on which corn syrup was the only remaining commodity.

Further amendment of the haulage order brings within its restrictions all commodity deliveries controlled by T-1 designed for export, except when such deliveries originate within a zone established by T-1 which includes the port of export within its boundaries.

The original order was published on pages 49 and 50 of the October, 1943, issue of PIT AND QUARRY.

CONSTRUCTION MACHINERY (USED).—Critical types of heavy used construction machinery—shovels, cranes, draglines, motor graders, and track-laying tractors—still must be registered by their owners in the nearest War Production Board regional office, but registration of many other items is no longer required, WPB announced January 18. This change is made in a revised version of the order controlling used construction machinery.

Practically all new construction machinery is now needed by the military, and civilian demand must be filled from idle used equipment. The order (L-196), first issued in the fall of 1942, set up an inventory of used equipment through compulsory registration by means of which idle equipment was listed and made available to those who needed it. Registration was originally required for more than 100 separate items. This number was reduced through successive amendments and exemptions so that the WPB Construction Machinery Division could concentrate on giving assistance in locating types of equipment that were and are most in demand. The latest changes to the order are designed to eliminate further unnecessary paper work on items that are fairly numerous and change hands readily.

Chief among the items no longer covered by L-196 are: Construction material batchers; jaw and roll crushers (portable type); crushing plants (portable type); blade ditchers; portable mounted rock-drilling machines; bituminous paving finishers; concrete paving finishers; blade and pull type earth-moving graders; agitator mixers (concrete truck type with or without elevating towers); concrete construction mixers (7-cubic feet capacity and larger); concrete pavers; and tandem road rollers.

Used equipment covered by L-196 as now amended is listed in Schedule A, attached to the order. The chief provisions of the order are:

1. Distributors and contractors owning this used equipment must register it in the nearest WPB regional office (WPB Form-1159).

2. Any change of status of such equipment owned by distributors or contractors (that is, if it becomes idle, is put to work after being idle, is rented for 30 days or more, or is scrapped) must also be reported to the regional office (WPB Form-1333).

3. Sale of these types of used machinery within the 48 states and the District of Columbia is permitted only upon WPB approval. Application made on WPB Form-1319 is filed in the nearest regional office. Ten exemptions from the restriction on sales are specified. The chief of these are: sale by a farmer, by a federal, state, county, municipal, or local governmental agency to another governmental agency; sale to a distributor; and sale for scrap.

CONSTRUCTION RESTRICTIONS.—Chairman Donald M. Nelson on January 12 announced that after extended consideration by the full board of WPB, it had been decided to continue restrictions on new construction and facilities without modification until the probable future course of the war becomes clearer.

"Construction has been sharply curtailed during the last year," Mr. Nelson said. "The entire situation was given full consideration at to-day's board meeting, and it was unanimously agreed that there must be no modification of the restrictions until we can be certain, from the course of the war, that such modification would not harm the war production program."

P-56 AGAIN REVISED.—Preference Rating Order P-56 was amended again on January 20, 1944. The underscored sections of P-56 as amended January 20 indicate revisions.

There is now no time limitation on the filing of applications for minor capital additions under the provisions of subparagraph (b) (3). Subparagraph (c) (1) provides only that a producer may file with the Mining Division a letter seeking a separate dollar-value quota for minor capital additions. A producer can consolidate quotas for minor capital additions covering all his plants even though they may be located in two or more states. The consolidated application must show the mine serial numbers of the plants included in the consolidated quota application.

If the purchase of new machinery and equipment can not be covered by minor capital additions, Form WPB-2910 must be submitted to the Mining Division. The Mining Division in paragraph (c) (2) has eliminated the word "mining" before the word "machinery" where it appeared of the earlier order, so as not to confine the procurement of machinery and equipment to that specifically designed for the mining industries.

Producers are not permitted to use any material, whether or not obtained under P-56, for any purpose other than that for which priorities assistance was granted to acquire it, nor may a producer sell any material used in the conduct of any enterprise described in paragraph (b) (1) of P-56, even if the material was received without priorities assistance under P-56 or any other order, except to another producer holding a serial number, or with the written approval of the Mining Division.

The amended P-56 makes it clear under paragraph (j) (2) that a simultaneous application must be submitted to the Mining Division on Form WPB-2910 whenever a producer proceeds under another WPB order or acquire new equipment.

The full text of P-56 as amended January 20, 1944, follows, the underscoring indicating changes from the amendment of December 24, 1943, published in the January, 1944 issue of PIT AND QUARRY.

PART 3201—MINING

[Preference Rating Order P-56 as Amended Jan. 20, 1944]

MINES AND SMELTERS

§ 3201.11 *Preference Rating Order P-56*—(a) *Purpose and scope.* This order explains how operators of mines and smelters in the United States and in foreign countries may get the materials and products they need to carry on their operations. The materials covered include not only maintenance, repair, and operating supplies, including controlled materials, but also machinery, other kinds of materials, and equipment. This order does not apply, however, to an operator of a nonessential mine as defined in Limitation Order L-208.

(b) *Definitions.* (1) "Producer" means a person operating any of the following enterprises, whether in the United States, or any of its territories, or in a foreign country, but does not include any enterprise defined as a "nonessential" mine in Order L-208 or any like enterprise located outside the United States, its territories or possessions: (i) any plant actually engaged in the extraction by surface, open-pit, or underground methods, or in the beneficiation, concentration, or preparation for shipment of the products of mining activity; (ii) any plant wholly engaged in the processing and burning of refractories; (iii) any plant producing any material listed below by smelting or refining processes, and to whom a serial number has been issued under Preference Rating Order P-73, or is hereafter issued as provided in paragraph (c):

Antimony	
Cobalt	Nickel
Copper	Platinum
Iridium	Tin
Lead	Tungsten
Mercury	Vanadium
Molybdenum	Zinc

(iv) any prospecting enterprise for the discovery, exploration, or development of new or additional mining projects, including the construction of access roads; and (v) mines, concentrating mills, smelters, railroads, power plants, refineries, and appurtenances owned and operated by the companies holding serial numbers under Preference Rating Order P-58 on December 24, 1943.

(2) "District" means a mine supply control district of the Foreign Economic Administration.

(3) "Maintenance, repair, and operating supplies" means material used for the following purposes by producers in the conduct of enterprises described above in paragraph (b) (1): (i) minimum upkeep necessary to continue the

working condition of essential property or equipment, and (ii) restoration of essential property or equipment to a sound working condition after wear and tear, damage, destruction or failure of parts, or the like have made the property or equipment unfit or unsafe for service; and supplies which are essential to and consumed or worn out in the conduct of such enterprises. In addition, except as hereinafter noted, the term "maintenance, repair, and operating supplies" includes minor capital additions normally necessary to the operation of the enterprise, but not exceeding in cost $500 (excluding purchaser's cost of labor) for any one complete capital addition. The term "one complete capital addition" includes a group of items customarily purchased together and all items which would normally be purchased as part of a single project or plan. No capital addition shall be subdivided for the purpose of coming within this paragraph.

Producers Holding Serial Numbers

(c) *Priorities assistance for producers with serial numbers.* Producers holding serial numbers, which may be obtained in the manner specified in paragraph (f), may apply for priorities assistance as follows:

(1) For maintenance, repair, and operating supplies, by filing the appropriate mine quota applicant form with the Mining Division, War Production Board, Washington 25, D. C., as follows:

Metal mines .....Form WPB-2937
Coal mines .....Form WPB-2938
Non-metallic mines .....Form WPB-2939
Smelters and refineries.....Form WPB-2040
Core or churn drill operators..Form WPB-2937

For the first and second quarters of 1944, in order to purchase minor capital additions as defined in paragraph (b) (3), a producer must apply for a dollar value quota by letter filed with the Mining Division, War Production Board, Washington 25, D. C. A producer who has several plants or other operating units, even though they maintain separate records of maintenance, repair, and operating supplies, may apply in such letter for a single, aggregate quota covering all of such units, designating the several serial numbers involved. After the second quarter of 1944, application for a dollar value quota for the purchase of such minor capital additions may be made on the appropriate mine quota application form listed above.

(2) For other machinery, materials and equipment, by submitting to the Mining Division, War Production Board, Washington 25, D. C., an application on Form WPB-2910. In submitting applications under this subparagraph, Form WPB-2910 may be accompanied by a letter giving any unusual circumstances relevant to the application.

Foreign Producers Operating Under Mine Supply Control Districts

(d) *Priorities assistance for certain foreign producers operating under mine supply control districts.* To enable a producer not holding a serial number hereunder and located outside the continental United States and within the jurisdiction of a district to obtain priorities assistance, the following procedure is established:

(1) For maintenance, repair, and operating supplies a district may apply for priorities assistance by filing Form WPB-2937 with the Mining Division, War Production Board, Washington 25, D. C. A producer not holding a serial number and located in a district may apply for priorities assistance by submitting to such district his purchase orders for maintenance, repair, or operating supplies, together with such information as may be required by the district. Within the limits of the priorities assistance granted to it pursuant to this paragraph (e) (1), such district may authenticate any such purchase order for maintenance, repair, or operating supplies by indicating the appropriate priorities assistance and countersigning the purchase order as follows:

Approved:

.....
Name of district
.....
Signature of authorized official

(2) For other machinery, materials, and equipment, a producer not holding a serial number and located within a district may submit to the War Production Board, Form WPB-2910, such application to be endorsed with the signed approval of the district within which the applicant is located.

(3) A distributor of maintenance, repair, or operating supplies or of other machinery, materials, or equipment used by producers, who is located outside the United States and within the jurisdiction of a district, may apply for priorities assistance in the same manner as prescribed in paragraphs (d) (1) and (d) (2) for producers not holding serial numbers and located within the jurisdiction of a district.

Other Producers Not Holding Serial Numbers

(e) (1) *Priorities assistance for other producers not holding serial numbers.* A preference rating of AA-5 is hereby assigned to delivery orders for maintenance, repair, and operating supplies, except minor capital additions as defined in paragraph (b) (3), placed by producers operating within the United States, its territories and possessions, and not holding serial numbers (other than operators of nonessential mines as defined in Limitation Order L-208). Such producers may apply for further priorities assistance for machinery or equipment or for further assistance for maintenance, repair, or operating supplies by submitting to the Mining Division of the War Production Board, Washington 25, D. C., a written application on Form WPB-2910. Foreign producers, not holding serial numbers and not located in a mine supply control district, may apply for priorities assistance by submitting to the Mining Division of the War Production Board a written application on Form WPB-2910.

(2) *Emergency procedure for non-serialized mines.* In case of actual or impending breakdown, producers not holding serial numbers may apply for priorities assistance on Form WPB-1436 or by telegraph either to the Washington Office or by the nearest regional or district office of the War Production Board.

Serial Numbers

(f) *Issuance of serial numbers.* Applications for serial numbers may, in the case of producers within the continental limits of the United States, be filed with the appropriate War Production Board Regional Office, Attention: Regional Technical Advisor. Mining Division: or with the appropriate State Coordinator of Mines for transmission to such Regional Advisor; or with the Mining Division, War Production Board, Washington, D. C. Serial number application by districts must be filed with the Mining Division, War Production Board, Washington 25, D. C. Applications by all other foreign producers should also be filed with the Mining Division, War Production Board, Washington 25, D. C. In filing such application, the following forms shall be used:

Metal mines .....Form WPB-1212
Coal mines .....Form WPB-2784
Non-metallic mines .....Form WPB-2758
Core or churn drill operators..Form WPB-2952

Smelters and refineries shall apply by letter. In issuing and cancelling serial numbers, the War Production Board will consider the importance to national defense of the present and prospective output of materials to be produced, the consumption of the critical material involved, and the importance to national defense of competing demands for such material, and competing demands for manpower and transportation. Serial numbers issued under Preference Rating Orders P-58 and P-73, and not cancelled prior to December 24, 1943, are hereby confirmed and shall be considered as having been issued under this Order P-56.

Use of Priorities Assistance; All Producers

(g) *Application and extension of priorities assistance.* The way to use preference ratings is explained in Priorities Regulation No. 3, and the way to use allotments, both in placing authorized controlled material orders and in making allotments, is explained in CMP Regulation No. 1. Instead of using the certification prescribed by those regulations or by any other regulation of the War Production Board, including Priorities Regulation No. 7, the producer may use the following endorsement signed manually or as provided in Priorities Regulation No. 7:

Allotment number .....
Preference rating .....
Order authorized under Preference Rating Order P-56, Serial No.....

He shall not add the symbol "MRO" despite the certification instructions in CMP Regulation No. 5 or any other regulation. Requirements of other orders of the War Production Board as to special certifications remain applicable, but the foregoing endorsement shall be added to such certification. The use of the foregoing endorsement by a producer shall constitute a representation, subject to the criminal penalties for misrepresentation contained in section 35A of the Criminal Code (18 U. S. C. 80) that the material or equipment ordered will be used for the purpose for which priorities assistance was granted to acquire it. Preference ratings assigned for maintenance, repair, and operating supplies on Forms WPB-2910 (nonserialized producers only), 2937, 2938, 2939, 2040 may not be used to obtain items on List A or List B of Priorities Regulation No. 3. Any items which are purchased without the use of preference ratings need not be charged against authorized dollar quotas.

(h) *Restrictions on receipts and inventories.* Notwithstanding the provisions of any other order or regulation of the War Production Board, including CMP Regulation 2, receipts and inventories of producers shall be subject to the following restrictions only: No producer shall receive any delivery of material which will increase his inventory of such material to an amount greater than the minimum necessary to sustain his current level of operations; and the ratio of such inventory to current production shall in no event exceed the ratio of average inventory to average production for the years 1938, 1939, and 1940.

(i) *Restrictions on use and resale of material.* Notwithstanding § 944.11 of Priorities Regulation No. 1, no producer shall use any material, whether or not obtained pursuant to this order, for any purpose other than that for which priorities assistance was granted to acquire it; nor may he sell any material (including machinery and equipment), which he has used in the conduct of any enterprise described in paragraph (b) (1), whether or not he obtained such material with priorities assistance under this or any other order, except:

(1) To a producer holding a serial number hereunder, or

(2) With the written approval of the War Production Board applied for by letter to the Mining Division, or

(3) With the written approval of a district if he is a non-serialized producer located within such district, or

(4) As permitted by Priorities Regulation No. 13.

Applicability of Other Regulations and Orders

(j) (1) *CMP Regulation No. 5 and other regulations of the War Production Board.* None of the restrictions contained in CMP Regulation No. 5 shall be applicable to producers, and no producer shall obtain any material under CMP Regulation No. 5. However, privileges under other orders and regulations of the War Production Board granted to persons on Schedules I and II of CMP Regulation No. 5 shall be considered as applicable to producers operating under this order. For example, Order E-5-a on gauges and precision measuring hand tools classifies a person on Schedules I and II of CMP Regulation No. 5 as an "approved user." Producers operating under Order P-56 are in the same position providing that certification clauses and all other provisions of such other orders are complied with.

(2) *Restriction on use of priorities assistance.* No producer, except as permitted by paragraph (e), shall acquire any maintenance, repair, or operating supplies through the use of any preference rating, except after prior application filed with the Mining Division of the War Production Board, Washington 25, D. C., on the appropriate mine quota application form for maintenance, repair, and operating supplies, as specified in paragraphs (c) and (d); nor shall he acquire any other machinery, material (other than maintenance, repair, and operating supplies), or equipment through the use of either any preference rating or any specific authorization of the War Production Board, except after prior application filed with the Mining Division on Form WPB-2910 or except after filing a project application. This means that, with exceptions noted, in cases where some other order or regulation of the War Production Board requires the filing of a special application in order for a person to get any particular product, producers who are covered by this Order P-56 are required to file an application in the form specified in this order with the Mining Division before they may file the special application required by the other order or regulation. The purpose of this provision is to enable the Mining Division both to screen all such applications in the light of its knowledge of the industry's requirements, and to help a producer in approved cases to obtain the material he wants.

Miscellaneous Provisions

(k) *Records, audits, and reports.* Each producer and each distributor shall keep and preserve for a period of not less than two years accurate and complete records of all transactions affected by this order, and shall submit from time to time to audit and inspection by duly authorized representatives of the War Production Board. Each producer and each distributor shall execute and file with the War Production Board or other designated agency such reports and questionnaires as the War Production Board may from time to time require.

(1) *Federal Reports Act of* 1942. The reporting requirements of this order have received the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(m) *Appeals.* Any appeal from the provisions of this order shall be made by filing a letter in triplicate with the Mining Division of the War Production Board, Washington 25, D. C., referring to the particular provision appealed from and stating fully the grounds of the appeal.

(n) *Communications.* All reports and applications hereunder and all other communications with respect to this order shall, except as otherwise specifically provided, be addressed to the Mining Division, War Production Board, Washington 25, D. C., Ref: P-56.

(o) *Violations.* Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using,

material under priority control and may be deprived of priorities assistance.

Issued this 20th day of January 1944.

WAR PRODUCTION BOARD,
By J. JOSEPH WHELAN,
Recording Secretary.

INTERPRETATION 1

APPLICABILITY TO CUTTING AND POLISHING OPERATIONS AT THE QUARRY

The term "producer" as defined in Preference Rating Order P-56 includes persons operating a quarry and also persons conducting further cutting and polishing operations at the quarry site, such as the manufacture of building stone and tombstones. These latter operations are included in the phrase "preparation for shipment, of the products of mining activity" appearing in paragraph (b) (1) (i) (§ 3201.11) of the order.

Since paragraph (j) (1) of the order forbids "producers" from obtaining any materials under CMP Regulation 5, producers of tombstones or other stone products at the quarry site may not operate under this regulation but must get priorities assistance exclusively under Order P-56.

The manufacture of tombstones and structural stone at a separate plant away from the quarry is not covered by Order P-56, and priorities assistance for MRO supplies required in such operations may be obtained under CMP Regulation 5. Under CMP Regulation 5, a rating of AA-2 is assigned to persons engaged in the manufacture of structural stone, while persons engaged in the manufacture of tombstones and monuments may use the AA-5 rating which is assigned under that regulation to unlisted business. (Issued Nov 13, 1943.)

TRACK-LAYING TRACTORS.—The War Production Board on January 21 issued a simplified version of the order controlling the sale of new track-laying tractors. Provisions of the order (L-53), which are the same as when first issued in February, 1942, restrict the sale or delivery of new track-laying tractors to those having specific WPB authorization. Application for authorization must be made on WPB Form-1319.

TRANSPORTATION TAX.—Pending action repealing the present law placing a 3 per cent. tax on the transportation of property for hire, the Congress, in a separate statute, has effected a slight change in the application of the 3 per cent. tax. Heretofore governmental exemption applied only when the governmental agency actually paid the transportation charged. On and after December 1, 1943, the exemption will apply if one of either of two circumstances is present: (1) that the governmental agency actually pays the freight charges; or (2) that the shipping papers show the consignor *or* consignee to be the government of the United States or any state, territory, or political subdivision thereof. Such papers may be accepted by the carrier as proof of the exempt character of the shipment and certificates of exemption are not required.

The text of the Treasury Department's order follows:

(T. D. 5312)
TITLE 26—INTERNAL REVENUE
CHAPTER I
SUBCHAPTER A—PART 143
TAX ON AMOUNTS PAID FOR TRANSPORTATION OF PROPERTY

Governmental Exemption

TREASURY DEPARTMENT
Office of Commissioner of
Internal Revenue,
Washington 25, D. C.

In order to conform Regulations 113 (Part 143, Title 26, Code of Federal Regulations, 1943 Sup.) to Public Law 180 (78th Congress), approved November 4, 1943, Subpart D of such regulations is amended to read as follows:

SUBPART D—GOVERNMENTAL EXEMPTIONS

(SEC. 3475. TRANSPORTATION OF PROPERTY.—AS ADDED BY SECTION 620(A) OF THE REVENUE ACT OF 1942.)

(b) Exemption of Government Transportation.—The tax imposed under this section shall not apply to amounts paid by or to the United States or any agency or instrumentality of the United States for the transportation of property. PUBLIC LAW 180—78TH CONGRESS, 1ST SESSION,

APPROVED NOVEMBER 4, 1943.

That section 3475(b) of the Internal Revenue Code (relating to the tax on the transportation of property) is amended to read as follows:

"(b) Government Transportation.—The tax imposed under this section shall not apply to amounts paid for the transportation of property to or from the Government of the United States, or any State, Territory, or political subdivision thereof, or the District of Columbia, or to amounts paid to the Post Office Department for the transportation of property."

SEC. 2. The amendment made by section 1 shall take effect with respect to amounts paid, on and after the first day of the first month which begins more than ten days after the date of the enactment of this Act, for the transportation of property on and after such first day.

SEC. 143.20. Amounts Paid for Transportation Originating Prior to December 1, 1943.—An amount paid for the transportation of property, where such transportation originated prior to December 1, 1943, is exempt from the tax (1) if paid directly to a carrier by the United States or any agency or instrumentality thereof, or by a State, or political subdvision thereof, or (2) if paid to the United States or any agency or instrumentality thereof. In either case an exemption certificate is not required.

SEC. 143.21. Amounts Paid for Transportation Originating on and after December 1, 1943.—An amount paid on or after December 1, 1943, for the transportation, originating on or after such date, of property to or from the Government of the United States, or any State, Territory, or political subdivision thereof, or the District of Columbia, is exempt from the tax. Where the shipping papers show the consignor or consignee to be the Government of the United States, or any State, Territory, or political subdivision thereof, or the District of Columbia, or an agency or instrumentality of any of the foregoing, such papers may be accepted by the carrier as proof of the exempt character of the shipment. A United States Government bill of lading may likewise be accepted as evidence of the exempt character of the shipment. In any case covered by the two preceding sentences, a certificate of exemption is not required.

All amounts paid to the Post Office Department for the transportation of property are exempt from the tax.

For penalties applicable to any person falsely claiming exemption under this section or section 143.20, see section 1718 of the Internal Revenue Code, made applicable to the tax on amounts paid for the transportation of property by section 3473 thereof.

(This Treasury Decision is issued under the authority of sections 3472 and 3791 of the Internal Revenue Code (53 Stat. 423, 467; 26 U. S. C. 3472, 3791) and Public Law 180 (78th Congress), approved November 4, 1943).

ROBERT E. HANNEGAN
Commissioner of Internal Revenue
Approved: December 16, 1943
JOHN L. SULLIVAN
Acting Secretary of the Treasury

TRUCK PARTS RATINGS.— The time limitation of April 1, 1944, on the use of AA-1 ratings to cover the production of replacement parts for medium and heavy motor trucks, truck trailers, passenger carriers, off-the-highway motor vehicles and motorized fire equipment, has now been removed, according to an announcement by the War Production Board on January 20.

Until this action, covered in an amendment to Limitation Order L-158, the time limitation on the use of AA-1 ratings was April 1. Under the terms of L-158 all orders for replacement parts for the categories of vehicles named, although these orders are not issued with a rating, must be produced as though they bore an AA-1 priority, notwithstanding the provisions of Priority Regulations No. 1.

Removal of the expiration date will thus enable manufacturers of replacement parts for these vehicles to schedule production for the second and subsequent quarters on an AA-1 priority basis.

Light truck passenger automobile replacement parts take an automatic AA-2X rating. There was no time limitation on the use of this rating for such replacement parts production.

SHARE YOUR PIT AND QUARRY

● When you have finished with your copy of Pit and Quarry please pass it to someone else in your organization. By doing so you will not only be helping him by making the information it contains available to him, too, but you will also be helping your government which, because of the shortage of manpower, has been forced to place limitations on the use of paper by magazine publishers. We shall, of course, continue to send Pit and Quarry regularly to you and to all other subscribers. But we suggest this simple method of making Pit and Quarry available to a larger number of men at a time when the information it provides is most urgently needed and without increasing our consumption of paper.

Reports 180 Brands of Explosives and Blasting Devices Used

One hundred eighty brand names are on the current active list of permissible explosives and blasting devices approved by the Bureau of Mines as the result of tests made at its Bruceton, Pa., explosives laboratory, according to Dr. R. R. Sayers, Director of the Bureau. The recently published list, compiled as of June 30, 1943, has 14 brand names less than the previous year's list. There were 22 permissible brands transferred to the inactive list and 8 additional brands put on the active list during the year.

Physical characteristics of the various explosives and devices are examined at Bruceton upon request of the manufacturers, with the objective to develop safer explosives for use in mines and other places. The rate of detonation, emission of gases, and length of flame in the case of explosives, and various features of the mechanical devices, are tested and recorded.

Priorities, Employer-Employee Relations, Postwar Planning Interest Sand-and-Gravel Men

another ON THE SPOT report

WITH an attendance record surpassing the expectations of even the most hopeful, the twenty-eighth annual convention of the National Sand & Gravel Association opened at the New Yorker Hotel in New York on January 25 for sessions that covered three days and drew large crowds. Even the Pacific Coast sent members to participate in the open-forum discussions that have become characteristic of the sand-and-gravel meetings. Subjects of great importance to producers in all parts of the country competed successfully with New York's many attractions in holding the attention of those in attendance.

Outlook for Industry In addressing the opening session of the National Sand & Gravel Association convention on Tuesday morning, January 25, President Otto S. Conrades (St. Louis Material & Supply Company, St. Louis) warned his listeners that they can not expect much in the way of increased demand for their products until the end of the war. But he was quite optimistic as to the future of the industry, regarding the all-time high record attained in production in 1942 as a peak year for the war period only, predicting that this peak may be exceeded in the years of peace to follow. Mr. Conrades is of the opinion that the low point of activity in the construction field may possibly be reached by the autumn of 1944, after which a gradual revival of building, spearheaded by some road construction, should become noticeable. He urged that all producers keep their equipment in good repair and that they maintain a reserve stock pile of material for any sudden demand which may develop.

Based on reports obtained from 99 member companies of the association, output for 1943 was off, on the average, about 25 per cent from the preceding year, ranging from little or no decline in a few areas to a drop of about 50 per cent in others. Mr. Conrades praised the work of the association's executive secretary, V. P. Ahearn, and that of Stanton Walker, director of engineering. He is of the opinion that specifications will become increasingly rigid in the postwar era and assured his listeners that the association through its research program would keep abreast of these trends and exert its influence in an attempt to keep such specifications on a rational basis.

In presenting the reports of the executive secretary and of the board of directors, Mr. Ahearn disclosed that, while the income of the association has been curtailed in almost direct proportion to the reduced output of the industry as a whole, sufficient funds are on hand and in prospect to continue the basic program of the association without appreciable curtailment. He urged management to pay particular attention to accident prevention, warning that accident frequency had risen sharply because of the necessary employment of much new, inexperienced help. He predicted that the truck-tire situation will become desperate within the next few months and assured the membership that every effort would be made and is now being made to see that the industry gets its fair share of available supplies after military requirements are met.

Priority Procedures Two speakers led the discussion on priority procedures which took up the remaining time of the first session. They were Arthur S. Knoizen, director, Mining Division, War Production Board, and M. B. Garber, consultant in the Construction-Machinery Division of the W.P.B.

Mr. Knoizen prefaced his talk with an example of what the W.P.B. can do to obtain quick priority assistance when such action seems called for. A few weeks ago fire destroyed a huge salt-processing plant at Marysville, Michigan. Its management immediately drew up plans for its rebuilding and representatives went to Washington to obtain the necessary approval to rebuild and re-equip the proposed plant. After two hours' consultation they were ready to return home with the required priorities for a new $2,500,000 plant!

Considerable time was devoted by Mr. Knoizen to explaining the recent amendments and revisions of Preference Rating Order P-56.[1] In December, 1943, an important change made capital additions not exceeding $500 covered by the definition of "maintenance, repairs and operating supplies." This was done, the speaker declared, to save time for the producers, the $500 maximum applying to each individual plant where more than one operation was involved. Preference-rating assistance formerly accorded those operating under P-58 and P-73 is now being given under P-56 as amended.

Further amendments to P-56 were made effective on January 20, just a few days before the convention opened.[2] Under the latest revision, it is possible for a producer to consolidate his quotas for minor capital additions covering all his plants in a single application. Under the consolidated application, the mine serial numbers of the separate plants must be shown, however.

Where the procurement of new machinery and equipment can not be covered by minor capital additions, WPB-2910 must be submitted. As now amended, the word "mining" before the word "machinery" has been eliminated, broadening the scope of the order.

P-56, as amended, also makes it plain that producers must now always file WPB-2910 applications for new equipment even though another order may require the filing of a separate application with a specific W.P.B. industry division other than the Mining Division. For example, the recent revision of the L-192 order requires the filing of WPB-1319

[1][See *Mining Order P-56 Amended* in PIT AND QUARRY, January, 1944, pages 71 and 72.—ED.]
[2][See *P-56 Again Revised* in this issue of PIT AND QUARRY, page 50.—ED.]

for equipment listed in Schedule A of L-192.

Mr. Garber dwelt at some length on Limitation Order L-196 of the War Production Board as amended January 18, 1944. In its new form, L-196 now exempts the sand-and-gravel industry from the obligation to file reports on used equipment with the regional W.P.B. offices. This information was welcome news to those attending since it relieves many of them from a task which often had been extremely burdensome. Only distributors and contractors are now required to file these reports. Although L-156 still restricts the sale of used excavators and tractors of recent manufacture, companies subject to P-56 are freed of this obligation.

Limitation Order L-192, amended January 10, 1944, made important changes in the procedure governing the purchase of new equipment, spare and repair parts, Mr. Garber explained. Bins, batchers, hoppers and some other items are now more readily obtainable.

In answer to a question by Robert B. Potts (Potts-Moore Sand & Gravel Company, Waco, Texas) as to the availability of equipment for postwar production facilities, Mr. Knoizen pointed out that the first test of essentiality was the contribution of such facilities to furthering the war effort. It must be shown, he declared, that such a plant is needed to meet current demands, otherwise equipment can not be obtained.

In Mr. Knoizen's opinion, many producers have failed to keep their plants in tip-top operating condition despite the fact that the necessary equiment and parts could be obtained. Screens, crushers and other fixed machinery are generally easier to buy than mobile units such as tractors, shovels and trucks, he pointed out.

Stephen Stepanian (Arrow Sand & Gravel Company, Columbus, Ohio) posed a hypothetical case wherein three plants, each having 100,000 tons capacity, exist in an area where the normal demand is 150,000 tons. One deposit having been depleted, its owner seeks aid in erecting a plant at a new location. What, inquired Mr. Stepanian, would be the War Production Board's attitude? Mr. Knoizen felt that the answer must definitely be "No" since the other two plants possessed sufficient capacity to take care of the demand and, unless some sudden need for huge quantities of material developed, rebuilding the third plant could not be justified.

Gravel as Ballast Stanton Walker, Director of Engineering of the association, at the Tuesday afternoon meeting stressed the importance of railroad ballast to sand and gravel producers. In 1942, he said, more than 23,000,000 tons of gravel ballast was produced, representing over 17 per cent. of the total commercial production. A recent survey of the membership indicates that their ballast tonnage may have been as much as 25 per cent. of their total output.

J. C. McLanahan, McLanahan & Stone Corp., Hollidaysburg, Pa.; A. E. Conover, Robins Conveyors, Inc., Passaic, N. J.; D. D. Guilfoil, Sauerman Bros., Inc., Chicago; W. J. Dunn, Robins Conveyors, Inc.; Ralph S. Hunt, Screen Equipment Co., Inc., Buffalo; Irwin F. Deister, Deister Machine Co., Fort Wayne.

In Mr. Walker's opinion the formulation of rational specifications for ballast has played an important part in bringing about recognition of the merits of gravel and in increasing its use by the railroads. The recommendations of the A.R.E.A. (American Railway Engineering Association), have provided a pattern for ballast specifications since 1926 when a committee of that body and a committee of the sand-and-gravel association's members co-operated to form the first such specifications. He stressed the fact that he is the chairman of the Subcommittee on Specifications and that Mr. Goldbeck of the National Crushed Stone Association is chairman of the Subcommittee on Tests, clear evidence that the A.R.E.A. is co-operating in every way in giving consideration to the problems of the producing industry.

The proposed modifications in ballast specifications, published in the February, 1943 A.R.E.A. *Bulletin*, he said consists principally of the incorporation and unification into one document of the requirements for prepared stone, slag and gravel ballast. The physical requirements for these three materials are made substantially the same except as to grading. One set of grading requirements is established for crushed stone and slag and another for gravel. These, he said, are essentially the same as those outlined in the A.R.E.A. specifications for the last several years except that the Los Angeles abrasion test has been substituted for the earlier Deval abrasion test and the maximum limit, with certain qualifications, has been set at 40 per cent. Ballast is also required to meet a soundness test with a loss not in excess of 10 per cent. after 5 cycles of the sodium-sulphate test.

"Three gradings are established for gravel ballast — one for 20 per cent. or less of crushed particles, one for 21 to 40 per cent. and a third for over 40 per cent. of crushed particles," Mr. Walker said. "These gradings vary principally in the amount of material finer than a No. 4 sieve which is included to provide stability. As much as 40 per cent of minus No. 4 is permitted in the first grade (a minimum of 20 is required) and none is required in the last grade. The minus No. 4 material must be quite coarse to allow adequate drainage. The grading specifications for gravel ballast are given in Table I.

"These specifications reflect railroad practices. I don't mean to say that they are always used in complete detail by the railroads, but they

Table I.—GRADING OF PREPARED GRAVEL BALLAST.

Size No.	Percentage Crushed Particles	Amounts Finer Than Each Sieve (square-opening laboratory sieves) Percentage by Weight							
		1½-Inch	1-Inch	½-Inch	No. 4	No. 8	No. 16	No. 50	No. 100
G-1	0–20	100	80–100	50–85	20–40	15–35	5–25	0–10	0–2
G-2	21–40	100	65–100	35–75	10–35	0–10	0–5	.....	.....
G-3	41–100	100	60–95	25–50	0–15	0–5	.....	.....	.....

Note. Size numbers and graduations in size adopted from National Bureau of Standards Simplified Practice Recommendation R 163-39.

are followed in principle by most of them. This fact will be demonstrated by a survey made of specifications of individual railroads which is to be published by the A.R.E.A. shortly. I am not at liberty prior to publication, to comment in any detail on that survey which was the work of the Subcommittee on Specifications of the Committee on Roadway and Ballast.

"It is logical that A.R.E.A. specifications should reflect railroad practices and it is believed that the survey just mentioned may give impetus to outright adoption by the railroads of A.R.E.A. recommendations in form and substance. I say it is logical because these specifications are based on information of railroad practices. For example, in 1932 the railroads were queried as to their use of gravel ballast and the A.R.E.A. specifications and, also, were asked for suggestions for changes. The results of that survey are published in the December, 1932 (Vol. 34, No. 352) *Bulletin* of the A.R.E.A.

"Of the 165,000 miles of railroads replying, (about two-thirds of the total) 68 per cent. indicated that they used prepared gravel ballast (78 per cent. if pit-run is included) and 31 per cent. indicated the use of either A.R.E.A. specifications or specifications based on them. As a result of that survey and information obtained in other ways, subsequent revision in A.R.E.A. recommendations and in railroad specifications have resulted in closer agreement as to ballast requirements.

"Another example of the widespread influence of A.R.E.A. recommendations is given by the fact that the Federal Specifications Board promulgated a couple of years ago specifications for ballast which are in substantial accord with them.

"In view of these facts it seems to me that every producer or potential producer of gravel ballast should familiarize himself with the specifications which form the basis for this discussion. They result from a background of experience which gives them great weight. Gravel is good railroad ballast and its reputation can best be maintained by making it to meet rational specifications."

Aggregates in Concrete C. E. Wuerpel, Principal Engineer, Central Concrete Laboratory, Corps of Engineers, U. S. Army, in discussing *Aggregates for Concrete* pointed out that the aggregate-preparation plants for such projects as Coulee Dam[1], Shasta Dam[2], and other similar projects proved that uniformly-graded aggregates can be obtained even from poor deposits. The best thing the producers can do, he said, is to produce such aggregates in order to improve their standing and that of sand and gravel in general among the large users of concrete aggregates. He further stated that much carefully-graded aggregate is spoiled by careless stock-piling by either the producer or the user.

Mr. Wuerpel also stressed the importance of the shape of aggregate particles and said that gravel has the natural advantage of suitable shape. He stated that tests recently completed under his direction show that there is a close relation between the flexural and compressive strengths of concrete made from various types of aggregates. He criticized many users of aggregates for specifying inadequate sizes in order to eliminate the necessity for an additional bin. Sizes of 1½ and 2 inches could be used to better advantage on many types of projects than the smaller sizes now in vogue.

In discussing the testing methods now in use Mr. Wuerpel said that even the greatest care in making them can not insure good concrete. The only sure guide is the service record of the concrete in which the aggregate is used. The biggest mistake in past testing methods used is, in his opinion, the insistence on testing the concrete aggregates alone instead of in the concrete. While he admitted that it presented quite a problem and that he had no specific suggestions to offer, he said that he favored the development of adequate tests of aggregates in concrete which could be applied to commercial production methods. He stated that his department will not sanction the use of aggregates having an absorption of over 2 per cent. with more than 5 per cent. of soft particles, and with a Los Angeles abrasion test loss of more than 35 per cent. The fine-aggregate strength should be at least 90 per cent. of that of standard Ottawa sand mortar. He also said that the magnesium-sulphate test is far from satisfactory but that it is the best now available and that efforts are being made to improve it.

In the ensuing discussion Mr. Walker cited tests of 127 coarse aggregates, mostly gravel, from different sources. Of these 62 per cent. had absorptions of over 1½ per cent. Of a slightly smaller number of sands tested only 53 per cent. exceeded that figure. He also said that 36 per cent, of the gravels had Los Angeles rattler losses in excess of 35 per cent. and that many of them have given satisfactory service as concrete aggregates.

Mr. Wuerpel commented that even the most absorptive aggregates will usually make good concrete, if they are dry when used so that they will absorb any excess water in the concrete. He said that of 2,031 different aggregates tested by his department in all parts of the country it was found that 1,556 were sound and that only 475, or 23.4 per cent., of them were unsound. The curve of unsoundness on a chart went up in even relation with the absorption of the aggregates. Between 2 and 2½ per cent. absorption the percentage of unsound aggregates was 74.3 and over 2½ per cent. the figure was 85.7 per cent. In the 1 to 1½ per cent. permissible classification the unsound aggregates formed only 34 per cent. of the total.

C. E. Proudly, North Carolina State Highway and Public Works Department, stressed the importance of further studies of the characteristics of concrete including the modulus of elasticity, fatigue, etc. He stated that it should be possible, when a concrete mixture is designed for a certain aggregate, to insure the continued receipt of identical mixtures. He also said that in rewriting the aggregate and concrete specifi-

[1][See Trauffer (W. E.): *Huge Aggregates Plant at Grand Coulee Dam Processed 2,500 Tons of Material per Hour.* PIT AND QUARRY, *January*, 1936, *page 48 et seq.*—ED.]
[2][See Trauffer (W. E.): *Shortage of Fine Sand Fraction Necessitates Elaborate Grinding at Shasta Dam Plant.* PIT AND QUARRY, March, 1941, page 43 *et seq.* — ED.]

cations of the state of North Carolina an effort is being made to strike a balance between theory and practice.

Mr. Walker agreed that there is some relation between the abrasion resistance of an aggregate and its other qualities in spite of the exceptions to this rule. He repeated that producers in general should be more careful of their grading and said that better aggregates can be more economical for certain types of work in spite of their higher cost. He cited European concrete design in which much smaller sections of higher strength are used than is customary here. This, he said, is partly due to the fact that aggregates are much more expensive there and labor is much cheaper.

It was suggested that minimum strengths and cement factors for concrete be set and that aggregates producers be required to supply materials to meet such requirements. Mr. Walker approved this idea in principle but said that there were many practical objections to its application. He then asked if the government would accept an aggregate which failed to meet any of the arbitrary specifications but which made good concrete. Mr. Wuerpel said they would not be acceptable as the freezing-and-thawing tests made in the laboratory are not comparable to actual conditions and there could be no guarantee that the concrete would actually stand up. This, he said, is one of the things the department is now working on.

A producer arose to remark that most specifications are either too broad or have certain narrow requirements which eliminate many good materials. He said that no general specification for aggregates can be written for the entire country or for any large part of it unless it can be adjusted to meet the many varying local conditions.

Mr. Wuerpel then commented on the fact that many companies produce aggregates with from 3½ to 10 per cent. passing through the 100-mesh screen and others could produce such material if they tried. Most of them lose too much of this fine material in washing the sand and this condition is often due to the requirements set up by the purchaser. He stated that we are now stressing cleanness of the aggregates at the expense of fines and predicted a swing in the other direction as a reaction against the extravagant use of cement. According to Mr. Wuerpel, concrete is a stone remolded for certain needs and the cement is designed to hold its component parts together in as near the original structure as possible. He ended by saying that his department does not expect to get perfect aggregates in every area but does want the best materials available in that area.

Irving Warner (Warner Company, Philadelphia) mentioned that in making exhaustive tests of sand he found that the fines below 325-mesh run rapidly lower in silica content.

Mr. Wuerpel cited a case in which river sand was used in concrete with very little fine sand in the aggregates. It was found that the best concrete was made when the river was at flood level and had a very high silt content.

Mr. Warner warned producers not to make provisions in their plants for the retention of the extremely fine sand unless they also made provisions to leave it out.

In answer to a question Mr. Wuerpel stated that he had not encountered any crushed-gravel sand but that he saw no reason why it should not be as good as the crushed-stone sand which his department has used on numerous occasions.

F. D. Coppock (American Aggregates Corporation, Greenville, Ohio) said that his company has never had any difficulty in providing sufficient fines in any of the 16 plants which it operates in a number of states under varying conditions. He said that in many of these plants the pea gravel is crushed in order to provide more fines. By storing separate fine fractions and then recombining them when loading out through reclaiming tunnel conveyors it is possible to provide any type of material desired.

Mr. Walker said that he opposes the use of any large percentage of material finer than 100-mesh except where it could not be avoided. He also opposes the establishment of a minimum cement requirement as it is often possible to produce a better concrete with less cement.

Bituminous Mixtures *Sand and Gravel in Bituminous Mixtures* was the subject of a paper by Bernard E. Gray, general manager and chief engineer of the Asphalt Institute. He opened with the recommendation that aggregates be judged as far as possible by the end results obtained. Aggregates, he said, are used for two purposes in asphalt, for the base and surface courses. In the past most attention had been paid to the quality of the aggregates used in the surface courses but in recent years the quality of materials for bases has also been stressed. According to Mr. Gray, a pavement is only as good as its base and the institute is encouraging the production of carefully-premixed asphalt bases in order to insure long life and the improvement in compaction procedure in order to sustain heavy wheel loads.

Mr. Gray said that the specifications for surface asphalt have been revised recently to permit the use of any aggregates that will make good asphalt and that the institute will change any requirements which are found to be barring good aggregates. He favors the exclusive use of plant-prepared aggregates for any type of asphalt. In his opinion the end result should be the controlling factor and he mentioned the fact that a stability or shear test is now being developed which will define the degrees of stability necessary for different types of uses. This will soon be issued in the form of a bulletin. He added that many otherwise unsuitable aggregates can be made usable by adding to them from 5 to 8 per cent. of other materials.

He then discussed a method of surface treatment which has been used successfully for heavy-duty city pavements. The sand used is first heated and is then coated with cut-back asphalt before it is spread over the asphalt being resurfaced.

Mr. Walker pointed out the need for a general specification as a guide for unenlightened users and producers. He also commented on the fact that the C.A.A. requirement of 40 per cent. crushed material often eliminates gravel from consideration as gravel often forms less than 40 per cent. of the mixture.

Car Supply The subject of *Car Supply in 1944* was discussed by Caleb R. Magee of the Association of American Railroads. He said that the railroads in 1943 broke all records for both freight and passenger traffic and that it was the fifth consecutive year of freight-traffic increase. In spite of this fact co-operation between the railroads and car users held car shortages to a low level. He pointed out that many of the vast new industries created by our war effort are located in areas from which no great volume of shipments have ever before been made and which were therefore not equipped to handle them. He cited as an example the shipment of bauxite from New York City to Quebec.

According to Mr. Magee, no reduction in either the passenger or

freight traffic load can be expected in 1944. Although the war-plant construction program is nearly completed and less building material will be shipped, more grain, produce and coal was shipped in 1943 than ever before and industrial and iron-ore shipments are also increasing. The biggest problem facing the railroads is the man-power shortage which is not expected to decrease soon. The railroads, he said, have already lost 250,000 men to the armed services or about one-fifth of their total pre-war personnel.

The sand-and-gravel industry, according to Mr. Magee, can help to improve the car situation by being more careful of them, especially in unloading them with clamshell buckets. Damaged cars must be laid up for repairs which not only take them out of service but also consume many valuable man-hours of labor. Only by such co-operation, he said, will it be possible to continue operation of the railroads without rationing either freight or passenger traffic. Mr. Magee also said that sand-and-gravel production will probably not drop as much in 1944 as most experts have predicted. He ended by stressing the fact that the railroads have overcome all the tremendous handicaps which have confronted them and yet have given good service to industry without shirking any military requirements.

Engineering Activities At the Wednesday morning session, presided over by Paul P. Bird (Boston Sand & Gravel Company, Boston) Stanton Walker presented his report on engineering activities. Much of the work being done is on the gradation of fines because of the tendency toward the requirement of a larger percentage of fine material in new specifications. One objective, he said, is to control the humps or bellies in gradation curves, and he implied that future specifications might limit the amount of material between two sieve sizes. New coarse-aggregate specifications, he said, are being patterned after the simplified-practice recommendations in the formation of which both aggregates associations had a hand.

Mr. Walker agreed with earlier statements that some of the soundness tests now in use are no longer considered important, as many aggregates not passing them are entirely suitable for use. Freezing-and-thawing tests of various aggregates in concrete are important, he said, and every effort is being made to simulate natural conditions. The results obtained showed a wide variation in materials from different deposits. Mr. Walker said that stockpiled aggregates which had an opportunity to drain in all cases stood freezing-and-thawing tests better than those taken direct from deposits, due to the higher water content in the latter. He also described tests made on dried aggregates which had been saturated for different periods. In order to better simulate natural conditions raw wet aggregates were also dried from the surface into different degrees of dryness. In all cases, said Mr. Walker, the driest aggregates gave the best results. In closing he mentioned that a new series of tests was being made on stream-wet aggregates at progressively lower temperatures beginning at 25 degrees F.

Granular-Base Construction *Highway Construction Practices in Massachusetts with Particular Reference to Construction of Granular Bases* was the subject of a paper by R. W. Coburn, chief engineer of the Massachusetts Department of Public Works. He stressed the importance of a properly-drained granular base which gives a dry base to any type of road surface laid on it. Slides illustrated roads built 15 years ago to present standards which are carrying heavy loads with perfect satisfaction because of their good gravel foundations. Many properly-built bituminous pavements, he said, have cost no more to maintain than cement-concrete roads for the same reason.

According to Mr. Coburn, his state discovered as early as 1913 that a properly-drained subgrade is necessary for concrete as well as bituminous pavements. He gave five reasons for the selection of a gravel base: (1) reduced intensity of pressure on the subgrade, (2) blanket action which prevents clay from working up into a macadam base, (3) capillary moisture can not reach the pavement, (4) drainage of the subgrade surface prevents the accumulation of free water, and (5) less and more uniform frost action. He closed with the statement that pit-run gravel used as a base material has made bituminous-concrete pavement economical to build and has brought its maintenance cost down to that of cement concrete.

In the ensuing discussion it was brought out that the use of water for the compaction of a subbase did no harm if provisions for drainage were made; that the use of a granular subbase was beneficial whether gravel or crushed stone was

F. D. Coppock, American Aggregates Corp., Greenville, Ohio; H. P. Caldwell, Ohio River Sand Co., Louisville; C. C. Slider, E. T. Slider, Inc., Louisville.

used; that the drainage of such bases was commonly provided for in the East but that it was neglected in the Mid-West. Mr. Walker said that efforts would be made to bring the advantages of such bases to the attention of highway officials in states not now using them. The statement was made that some states were not as fortunate as Massachusetts where, according to Mr. Coburn, good bank-run gravel is available locally at the low cost of 47 cents per cubic yard loaded and spread on the subgrade. Mr. Walker replied that the cost is not the only item to be considered if it means the difference between a good road and a bad one.

Irving Warner said that gravel makes an ideal subbase because it quickly settles into a state of minimum voids and is then permanently stable.

Operating Problems In the open forum on engineering problems, which followed, Stanton Walker introduced S. A. Falco and G. B. Walker of the American Cyanamid Company who were present to discuss the possibilities of the "sink-and-float" method for removing undesirable ingredients from sand and gravel. According to them, this method is now being used in twelve plants to process more than 12,000,000 tons of materials annually. This method, they said, can be used on materials with specific gravities of from 2.5 to 3.4 and separations can be made to .02. Iron-ore operators are treating ore at a total operating cost of 6 cents per ton in a 200-ton per hour plant. An installation of this size, they said, costs about $40,000 at the factory. For processing iron ore ferrosilicon is used as the medium and the magnesites which could be used for sand

and gravel would lower the operating cost about a cent per ton. The process was then briefly described.[1]

T. L. Herbert, Jr. (T. L. Herbert & Son, Nashville) described his company's use for the past 15 years of concentrating tables for the removal of lignite and other foreign materials from sand and from gravel up to 2 inches in size. This has been done at a cost of from 6 to 10 cents per ton.[2]

Mr. Coppock described some of the American Aggregates Corporations' experiences in controlling the gradation of fines. It was found that ordinary settling cones were not large enough to retain minus-100-mesh material. This problem was solved by attaching from 20 to 30 cones to the bottom of a large tank. This arrangement retained the desired fines, had sufficient capacity, and made it possible to produce several different grades of sand which could then be blended to meet any desired specification. The tank used in most of these plants, is 16 feet wide and 20 feet long and has five rows of four cones each. The water level in the tanks is about two feet above the tops of the cones. A steel baffle 6 inches above the floor speeds up the current over the first row of four cones. A baffle over the second row leaves a 12-inch space, and one over the third row leaves an 18-inch space. The cones, he said, have 45-degree sides. Such a tank, said Mr. Coppock, is usually fed minus-10-mesh material and makes four separations down to 100-mesh. An installation now being made at one plant is intended to facilitate the removal of a surplus of 20- to 30-mesh material from the sand. This system, he said, fits in well with the system of tunnel-storage, reclamation and blending used in these plants which has been described many times in these pages.[3]

In discussing the production of crushed gravel, Mr. Coppock said that railroads have encouraged the production of ballast in which the crushed gravel is recombined. They are now putting down a layer of sandy material under the ballast in order to prevent fouling by pumping. He said that engineers are asking for 35, 40 and even 50 per cent. crushed gravel as this type of materials combines stability with good drainage.

Post-War Planning Major-General Philip B. Fleming, Administrator Federal Works Agency, was the first speaker to address a joint session devoted to the post-war prospects for the construction industry. He stated that immediate and careful plans must be made for federal construction projects after the war, if such projects are to play their part in employing men demobilized from the armed forces and from war industries. Local governments, he said, are not making adequate plans for the post-war period. General Fleming concluded his remarks by pointing out that the problem is national in scope and that carefully laid plans made now will result in economies after the war.

Thomas S. Holden (F. W. Dodge Corporation, New York) followed General Fleming with an analysis of studies made by the Dodge Corporation of post-war construction potentials. Average construction in the post-war decade, he said, will be double that in the pre-war decade, with residential construction tripled, non-residential construction doubled and heavy construction running 50 per cent. greater.

Numerous shortages, Mr. Holden said, will have a profound effect on the immediate post-war picture, and it is to be expected that restrictions will be lifted gradually. He predicted that producers of sand and gravel should find themselves in a favored position after the war, with highway construction and residential building at high levels.

Mr. Holden recalled that after World War I it required six years to make up the construction back-log, and that deferred demands are now accumulating week by week at an ever-increasing rate. There are in the country to-day, he said, over $77,000,000,000 worth of deferred purchasing power ready for immediate use after the war. In closing Mr. Holden cautioned that only sound over-all economic policies can bring about the fulfillment of the post-war potential. We must, he said, plan for prosperity.

Colonel Willard T. Chevalier (publisher of *Business Week*, New York) spoke next. In agreeing with the conclusions reached by General Fleming he took exception to the premises on which those conclusions were based. In this connection Colonel Chevalier reminded his listeners that federal assistance is always given at a price, and he stressed the need for confidence in our ability to utilize purchasing power accumulated during the war period.

There is, he said, a serious possibility of post-war inflation when $100,000,000,000 of pent-up purchasing power is suddenly turned loose, and it will be up to business to curb this threat by quickly swinging into the production of peace-time products. If this is to be accomplished, he continued, there must be a tapering off of the war-time "collectivist" economy, so that business will have some assurance of the sort of economy under which it will operate.

The back-log of consumer demand, Colonel Chevalier predicted, will be only a drop in the bucket compared with the over-all post-war potential, if Americans have the courage and the vision to go on to new horizons under our system of free enterprise.

Following Colonel Chevalier's talk an informal panel discussion was held on individual planning in the sand-and-gravel and ready-mixed-concrete industries. Alexander Foster, Jr. (Warner Company, Philadelphia) reported that $500,000,000 will be spent on public roads in the state of Pennsylvania in the five-year period following the war. He pointed out that post-war road work must be planned in advance due to the time required to design modern complex systems, but that much difficulty was being experienced due to the war-time shortage of engineers.

A. W. Kimmel (Ready-Mixed Corporation, Dayton, Ohio) reported that the city of Dayton has a definite program for post-war construction of buildings, roads and bridges. Predicting that financing would prove to be a major problem in carrying out such programs after the war, he urged that producers interest themselves in this phase of the problem.

Robert Mitchell (Consolidated Rock Products Company, Los Angeles) revealed that California started post-war studies in March, 1943, with a fund of $96,000 appropriated by the legislature to establish a commission for re-employment and reconstruction. He said that actual plans are now on hand for $153,000,000 worth of post-war construction, and that funds have been earmarked to finance the program.

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[1][See also Trauffer (W. E.): *Fuel, Power and Labor Costs Declines as New Drying Plant Goes in Service.* PIT AND QUARRY, September, 1942, page 53 *et seq.* — ED.]

[2][See also Trauffer (W. E.): *This Company Gives Service in Selling Pre-Mixed Concrete.* PIT AND QUARRY, July 27, 1932, page 14 *et seq.* — ED.]

[3][See Trauffer (W. E.): *American Aggregates' New Columbus Plant,* PIT AND QUARRY, October, 1940, page 34 *et seq.*; American Aggregates *Rebuilds Plant 13A in Oxford District,* PIT AND QUARRY, March, 1942, page 65 *et seq.*; *New Gravel Plants Output Averages 600 Tons Hourly,* PIT AND QUARRY, April, 1943, page 44 *et seq.* — ED.]

Taxation Problems Because of the absorbing interest of the discussions scheduled for the second joint meeting of the sand-and-gravel and ready-mixed-concrete producers, the session held on Thursday afternoon drew and held a large crowd. Under war-time conditions particularly, taxation, prices and producers' responsibilities under federal labor laws are problems of major importance to producers everywhere.

Now that the uncertainties of old age, which have for so long troubled workers, are receiving more considerate attention from employers, possible methods of providing some form of pension compensation for those who have passed certain ages or have been retired because of physical or other disability are of great interest to employers with a social attitude toward their workers. In discussing *Employees' Pension Plans,* David A. Gaskill, of the firm of Thompson, Hine & Flory, emphasized the federal income and excess-profits aspects of the subject. The sense of social responsibility which spreads each year among increasing numbers of employers is strengthened by the fact that the contributions made by them to pension plans entitle them to tax deductions in the years in which such contributions are made. Individual income taxes from the employees covered by such plans are not collectible until those years in which the pensions become payable and are received by them. In many cases these payments will occur in years in which it is expected that income tax rates will be lower than they are at present.

Mr. Gaskill pointed out that pension plans must be carefully chosen so that the employer will not be denied his right of tax deduction when his contributions to a pension trust are made and they will not require the employee to pay income taxes on those amounts until the years in which the payments are made to him.

The speaker described the pension trust, which is one of the forms by which these dangers can be avoided, and the annuity under which all the employees are covered by a single group annuity contract. Most pension trusts, he said, involve the signing of a trust agreement between the employer and a trustee—usually a bank or trust company, although often an individual—who administers the trust. Besides setting up the plan the agreement usually recites all the conditions under which the employees become eligible to participate in the plan, the kind of policies that are to be acquired in order to fund the employer's liability, the amounts of the pensions to be paid, the normal retirement date, etc. A pension committee is usually set up under the agreement to carry out its provisions. For each employee the trustee purchases a separate insurance contract, usually on a level annual-premium basis. The trustee owns the policies and pays the premiums, the funds for which are furnished by the employer. The premiums are of such a size that if they are paid regularly they will provide the desired annuity at the employee's retirement age.

Two types of contract can be obtained to get the desired results: the retirement annuity contract which provides the required life annuity through yearly payment of the premium, and the insurance policy, which involves passage of a physical examination by the employee. These insurance policies are similar to endowment policies because when the retirement age arrives their cash-surrender or paid-up value is sufficient to buy the life annuity required under the pension plan. In such cases the pension committee buys an annuity policy for each employee who may be unable to pass the required physical examination. The insurance-policy plan provides an additional advantage in that the employee's designated beneficiaries are protected if the employee should die before reaching his retirement age. If the employee reaches and passes this age the policy matures as a life annuity. The speaker said that the insurance-policy method is more costly than the annuity-contract method but that the difference is not great and that most employers choose it in preference to the annuity contract.

With regard to the deductibility of pension contributions in federal tax declarations, Mr. Gaskill said that the Treasury Department looks upon the cost of the insurance-policy method as taxable income to the employee as of the year in which the insurance premiums are paid, but the department uses a formula for calculating that tax which does not impose a heavy burden on the employee.

Insurance-policy plans usually provide death benefits equal to one hundred times the monthly pension benefit which is provided at the employee's retirement age. As the annuity-contract method also produces cash-surrender values payable to the employee's designated beneficiaries in the event of his death before reaching the retirement age it also provides something for his estate or beneficiaries as does the insurance-policy method.

The speaker then dealt with some of the various provisions of pension plans, such as a reduced pension beginning with the employee's disability if that should occur before his reaching the retirement age and depending upon the amount of the annuity which the cash-surrender value of his contract would purchase at the time of such occurrence;

John D. Gregg, Whittier, Cal.; Robert Mitchell, Consolidated Rock Products Co., Los Angeles, new president of the National Sand & Gravel Assn.; Eric Ryberg and J. E. Hatch, Utah Sand & Gravel Products Corp., Salt Lake City.

transfer in the event of discontinuance by the employer of the contributions which he undertook to make —a right always reserved by the employer—in which case the employee is given his contract to be surrendered for cash or carried on at his own expense; percentage payment in case the employee is discharged or voluntarily leaves his work, the amount being based on his length of service since either his first engagement or the beginning of the pension plan.

The employee's compensation usually determines the amount of the annuity to be paid him after his retirement and if this should change during his employment, the amount of the annuity may change accordingly. Sometimes such changes are disregarded if they occur within the last five or ten years prior to the normal retirement age. If the employee should remain in the employ of his employer after his retirement age, this does not ordinarily affect his rights under the pension plan for payments begin immediately on his retirement. The retirement age is usually 65 years for all types of worker, but it is sometimes fixed at 60 years in the case of women workers. If employees are of an age within ten years of the normal retirement age when they are incorporated in the plan, their retirement age is usually set at ten years from the date of their joining it.

After his retirement the employee receives his pension payments until his death and thereafter they are paid for a guaranteed number of years to his beneficiary if he should die before receiving the minimum number of payments provided by the agreement.

The Internal Revenue Code requires that the plan selected by an employer must not "discriminate in favor of employees who are officers, shareholders, persons whose principal duties consists in supervising the work of other employees, or highly-compensated employees". However, this provision (Section 165) does not consider as discriminatory proposed plans "merely because" they exclude employees paid solely in the form of wages as defined by the Social Security law ($3,000 and under) or are based merely on earnings in excess of $3,000 a year; or are confined to salaried or clerical employees; or provide benefits directly proportional to the compensation of the employees affected.

The same section of the code provides that a pension trust meets the requirements of the law if it benefits 70 per cent. or more of all the employer's employees, or 80 per cent. of all the eligible employees if at least 70 per cent. of all the workers are eligible to participate in the plan.

With reference to discrimination in favor of what the act calls "highly compensated employees" Mr. Gaskill described a hypothetical case in which a corporation was owned by two stockholders who were employed at equal salaries of $15,000 a year, each of whom owned 50 per cent. of the stock and who were covered by a pension plan limited in its benefits to employees earning over $3,000 a year. If these two employees were the only ones earning over $3,000 a year, the Treasury Department would consider the plan discriminatory.

The speaker advised his listeners to consult their attorneys for advice on the deductibility of pension contributions in their individual cases because Section 23 (p) of the Internal Revenue Act which covers this subject is filled with technicalities and complications. However, he said briefly that the contributions must be reasonable in amount. Some of the pension plans submitted to the Commissioner of Internal Revenue for approval have been rejected, others approved. In the former cases the reasons for the objections are stated and the employer has an opportunity to revise his plan to make it acceptable. In most cases Mr. Gaskill advises that approval be obtained before a plan is placed in operation.

William E. Hayes, of the firm of Hayes & Hayes, discussed at some length the provisions of Section 222 of the Revenue Act of 1942, which was designed to provide relief from the excess-profits tax and is also known as Section 722 of the Revenue Code. Section 722 sets out the conditions under which the taxpayer is entitled to relief and deals also with invested-capital corporations which are not entitled to use the excess-profits credit based on income.

Relief where the income credit is inadequate is due the taxpayer for any of a number of reasons, such as: Interrupted or reduced normal production during any base-period years because of events that are unusual or peculiar to the taxpayer; economic depression in the taxpayer's base period or in that of his industry because of unusual temporary economic conditions; depression in the taxpayer's base period which causes him to experience a profit cycle materially different from the general-business cycle, or sporadic and intermittent periods of large production and profits that are not properly represented in the base period; establishment of the taxpayer's business, or change in its character, during or just prior to the base period; or any other factor which causes an inadequate standard of normal earnings during the base period.

If the taxpayer is an invested-capital corporation which is not permitted to use the excess-profits credit based on income, it can obtain relief if its earnings are due to assets that are intangible and can not be included in invested capital, or if its business is of such a nature that capital is not an important factor in producing income, or if the invested capital is abnormally low.

The speaker then discussed in considerable detail the various provisions of the Regulations which deal with these criteria for determining eligibility for relief, and cited also the reports of the Senate Finance Committee and the House Ways and Means Committee. He described the method of preparing and filing claims and drew comparisons between the American law and the laws of Great Britain and Canada and the American Revenue Acts of 1917 and 1918.

Speaking from the point of view of the sand-and-gravel producer, William Edward Hole (American Aggregates Corporation, Greenville, Ohio) drew attention to the provisions of Section 735 of the Revenue Code mentioned by Mr. Hayes. This section provides relief to mining and lumber companies for excessive output in any excess-profits years, comparing that production with the output of the same material during the base period 1936-1939. The taxpayer takes the average annual output of his product in the 4-year base period, in the manner provided by the provisions of Section 735, and compares his annual output in any excess-profits year with it. If the latter exceeds the former, he is entitled to a certain credit calculated from the formula set out in that section.

The speaker cited an example in which a mining company had an average annual output of 200,000 tons in the 1936-1939 base period. In 1942 its output amounted to 300,000 tons, an excess of 100,000 tons for that year. The average unit profit is obtained, Mr. Hole explained, by taking the aggregate earnings of the taxpayer's mineral deposit during the base period and

dividing them by the number of tons of product turned out in those four years. If such a calculation should show, let it be assumed, an average unit profit of 20 cents a ton, the profit on the excess production of 100,000 tons in 1942 would be 20 cents per ton multiplied by 100,000 tons, or $20,000.

The taxpayer in the case cited must then determine how many tons of the mineral produced remains in his deposit as of the last day of 1942, and this will be the tonnage initially approved by the Treasury Department for the purpose of calculating depletion. He then takes this initial tonnage computed at the time he establishes his rate, gives effect to all the depletions subsequently accumulated, and the result is the remaining tonnage as of the end of 1942. According to the formula set up, 100,000 tons, the excess tonnage for 1942, is added to the remaining tonnage of 1,000,000, giving a sum of 1,100,000. This is used as the denominator of a fraction, of which the numerator is 100,000 tons, the 1942 excess tonnage. The result of this division is approximately 8 per cent., which, according to Section 735, entitles the taxpayer to a credit of 20 per cent. against the 1942 profit of $20,000. The credit would be, therefore, $4,000. Mr. Hole explained that the example cited was a somewhat simplified explanation of the application of the rule affecting excess-profits taxes.

In answer to a question raised by a member of the audience, Mr. Hayes said that a drought affecting the taxpayer's business adversely and making production for that period low would entitle the taxpayer to special consideration in calculating the proper base for measuring normal earnings.

Referring to a company which had acquired another company in 1941 and, as the result, obtained much new business and abnormally large earnings subsequently, another producer asked whether, in those circumstances, the taxpayer would be permitted to reconstruct the base-period years. Mr. Hayes said that the answer would be "Yes".

Another question asked whether a new company formed late in 1940 with very little capital would be entitled to construct an average net income for the base period. The answer was "Yes".

Another producer asked Mr. Hayes to name some intangible assets not includible in invested capital under Section 718, which might make important contributions to income. In answer he mentioned trade contacts as the result of which one goes out and builds work that later brings higher income that is not truly reflected in the years in which the trade-building work was done.

A few questions were then asked of Mr. Gaskill on the subject of pension trusts. One asked whether a company, which had established a pension trust and carried it through for two years when it found itself in a high tax bracket, could later discontinue it without having the Treasury Department disallow its income-tax deductions for those two years. Mr. Gaskill said that the department would probably disallow them, although it would inquire into the reason for the discontinuance and if it were a genuine one, not founded on a desire to escape tax liability, it probably would be accepted as having been made in good faith.

Still another question asked whether it would be necessary for a company establishing a pension fund to secure the approval of the Salary Stabilization Unit of the Treasury Department or of the National War Labor Board. The reply was that a plan which does not provide payments until the employee's retirement or disability is not considered inflationary. In his answer Mr. Gaskill said that profit-sharing trusts, however, are in a different category unless they provide that the profit distributions are not to be made until the employee's death, retirement, or old age. In no case can the employee get the benefits of a profit-sharing trust if he keeps on working, according to the rulings of those government agencies.

Price-Relief Procedures Some sand-and-gravel producers have felt that they were the victims of inequities under the price-adjustment provisions of the General Maximum Price Regulation, issued April 28, 1942, by the Office of Price Administration, as well as those of Maximum Price Regulation 188 issued on July 29 of that year. Therefore, the paper on *Price-Relief Procedures Available to the Sand-and-Gravel and Ready-Mixed-Concrete Industries,* presented by Walter H. Acheson of the Building Materials Branch of the OPA, was of practical interest. In explanation of the revocation of the provisions for individual price adjustment provided by the OPA regulations which occurred a few months later, the speaker said that it was believed that if complaints about inequities had not been filed by November of 1942, the situation could not have been serious and that what inequities had existed had probably been righted by changed conditions. By March of 1943, however, it became necessary to make individual adjustments in certain areas and for that purpose Amendment IX to Maximum Price Regulation 188 was issued on the 27th day of that month.

These adjustments were based on the theory of local shortages of the materials produced by the companies in whose behalf the changes were made; that is, in areas where shortages of materials essential to the war effort, or necessary to the maintenance of a standard of living consistent with the war effort, either already existed or threatened to arise. The price changes authorized in such cases were made in the belief that higher prices might encourage production or result in the provision of new production facilities.

In explaining the reasons by which price adjustments are judged to be warranted or not, Mr. Acheson stated that the total cost to manufacture and sell has been interpreted to include all the direct costs plus the overhead charges before taxes, and that this is the only basis on which an adjustment can be made in the sand-and-gravel and ready-mixed-concrete industries. All applications for price adjustment under the local-shortage claim must be supported by profit-and-loss statements for 1942 and 1943 or for the latest quarter for which financial data are available.

Another price-adjustment procedure is available on sales to the

John V. Owens and H. V. Owens, Eastern Rock Products, Inc., Utica, N. Y.

Army, Navy, and other war agencies —Procedure Regulation 6—but generally the same type of information is required.

Mr. Acheson then described circumstances in which petitions for amendment of general application for an industry or a part of an industry can be made. In the sand-and-gravel and ready-mixed-concrete industries, the speaker said, regions would be determined as the result of study. These would probably be small and a petition might properly apply only to a small marketing area.

In the determination of fair and equitable prices by the Administrator of the Emergency Price Control Act of 1942—under which the OPA was established — consideration is given to industries whose volume is still approximately the same as in peace time and those who are experiencing decreased volume. For the first group the base period is the 1936-1939 unit used in excess-profits tax calculations. The average annual earnings for this period are compared with those of the most recent year, and if the latter are below the 4-year average, the industry, or the members of that industry experiencing the decline, are entitled to a price adjustment that will restore the former level of earnings. In making such adjustments the OPA will give proper consideration to labor-cost increases that have been approved by the Director of Economic Stabilization and are measurable.

In industries whose latest earnings are below the 1936-1939 average an effort is made to estimate the requirements for the next year in the area for which a price-adjustment application is filed. The direct costs and overhead are carefully studied, the depreciation charges being taken out of the direct-cost figures. The figures of low-cost producers and high-cost producers are assembled and a weighted-average charge, based on a normal operating period, is taken for overhead charges and depreciation. These, combined with the direct costs, are then projected. The production of all the companies in the area for the preceding year are then studied and if only ten companies, for example, are needed to furnish the next year's requirements, the tenth company, counted in ascending order from the one of lowest costs to the one of highest costs, becomes the standard by which the others are judged. Its cost, plus its weighted-average overhead and depreciation charges, is taken as the amount of the adjustment. It is supposed that if the tenth company in the order of ascending costs is doing no more than holding its own, all the lower-cost companies below it in the list are theoretically making a profit and all those above it are theoretically showing a loss.

If a producer has been granted permission to make an upward wage adjustment that will necessitate an increase in his prices, he must file an application with the OPA within 15 days thereafter. In disputed cases the limit is 15 days after the report of the examiner or tripartite panel studying the case.

Mr. Acheson then discussed the pricing of new products, which the OPA has interpreted to mean any producer's products which were not sold or offered for sale by him during March 1942. Of the four pricing methods available under Price Regulation 188 only two are applicable to the sand-and-gravel and ready-mixed-concrete industries: one method by which the new price is related to the prices of comparable products in the producer's line of products, and another under which the price is determined either on the basis of estimated costs or at the level current for the entire industry.

Regulation 188 is being amended so that ready-mixed-concrete and concrete-products manufacturers will be relieved of all obligation to be governed by any of the four pricing methods provided by that regulation. This means that these industries can return to their old methods of pricing new products.

In answer to a question from the floor, Mr. Acheson said that any price adjustment made in an area as the result of an application filed by a number of producers is granted also to all producers in the area, even to those who did not join in making the application. He explained that the OPA is satisfied if it obtains cost data covering from 70 to 75 per cent. of the volume of production in a given area and will make them the basis of its price determination, which would then apply to the entire area.

Mr. Acheson said that applications may be made by a group of producers or by a single producer, but most petitions for price amendments are joint applications, as provided for by Procedural Regulation Number 1.

Labor and Wages

L. Metcalf Walling, Administrator, Wage and Hour and Public Contracts Division of the United States Department of Labor, discussed the *Administration of the Fair Labor Standards Act and the Walsh-Healey Public Contracts Act*. In opening he referred briefly to the history of the seasonal exemption granted to northern producers of sand and gravel and crushed stone from the hour provisions of the former law, as the result of which producers in the northern states, wherein the cold weather of winter prevents year-'round operation and requires the working of longer hours in the summer, are permitted to work their employees up to 12 hours a day or 56 hours a week for a period of 14 weeks in each year. The same exemption was granted other plants, not located in the northern area, wherever local climatic conditions required them to follow the same operating pattern as northern plants. Such supplementary exemptions have been granted to 12 companies in the crushed-stone industry and to 4 in the sand-and-gravel industry.

The speaker referred to the new 40-cents-an-hour minimum-wage order under which the sand-and-gravel industry has been operating since December 27, 1943, and spoke of the widespread belief that high wages are now, because of the war, universal. He cited the action of the Stone, Clay and Glass Industry Committee, seven of whose eight members voted against the imposition of the 40-cent minimum rate, as evidence of the erroneous belief that $16 pay for a 40-hour work week is sufficient for a family man in these times. He spoke regretfully of the fact that newspapers and magazines throughout the country have given wide publicity to the payment of high wages in certain industries and have left the general public with the impression that such high wages are not only common but indeed universal, and that he had looked in vain to the correspondence columns of those periodicals for statements from employers correcting the false understanding thus created. He urged his listeners to contribute some truthful evidence on that subject in cases where they are fully aware of the facts, so that the revelation of the truth would not be left entirely to labor organizations and public officials.

The action of the Stone, Clay and Glass Industry Committee was unusual, according to the speaker, in that this is the only committee, of all those which have made industry-committee recommendations with respect to wage rates since 1938, that

did not vote in favor of raising the existing minimum rates. He said that in 83 per cent. of the committees a majority of the employer representatives voted for the recommended rate and that in another 2 per cent. of the committees the employer members stood half for the increase and half against it. In over half of the 113 cases the employer, employee and public representatives on the committees voted unanimously for the rates recommended.

Mr. Walling interprets this high percentage of employers in favor of the minimum wage rates recommended to mean that a large number of employers and trade associations support the philosophy behind the Fair Labor Standards Act in so far as they relate to wage rates. The law aimed, he said, at providing greater prosperity for the country as a whole—for capital, management and white-collar workers and not alone for labor.

In support of the philosophy of the act which provided for a gradual increase of wage rates up to the 40-cent level Mr. Walling quoted a statement of one of the committee members representing the crushed-stone employers who argued against the adoption of the recommended minimum rate. According to the speaker, this man had said that crushed-stone prices are set by the economic conditions of the localities in which the product is used, and that they tend to rise in areas that are wealthy and prosperous and to drop in areas that are not. He asked whether a stronger plea for the gradual increase of wages above starvation levels could be made than this acknowledgment of the dependence of crushed-stone producers and other business men on the prevalence of a high level of prosperity. He credited Henry Ford with having initiated among business men the theory that prosperity could not be healthy unless industry could sell to its own workers.

With reference to the post-war outlook for the sand-and-gravel industry Mr. Walling painted a prosperous future. He referred to the period as a "post-war boom" which would benefit not only the sand-and-gravel industry but the entire construction field. From the plans of private industry, the deferred and rapidly accumulating demands for new housing facilities, and the post-war programs of local, state and federal government agencies he drew the reasons for such an expectation. He asked his listeners whether they did not want the coming boom to last. It will not be more than "the false breath of spring in February," he said, if, while the armed forces are being demobilized, wages should be cut down to the point that makes it impossible for the general public to buy the products of the industry. He said he believed that wise employers in all lines of business would voluntarily provide wages that would enable their workers to buy the products—housing and other types of construction—on which the sand-and-gravel industry so largely depends.

The speaker closed his remarks with a brief account of the many ways in which the divisions operating under his direction are assisting other government agencies, such as the National War Labor Board, in functioning under the greatly increased strain placed upon them without comparable increases in staffs. He pointed out some of the advantages to business men that have resulted from the combination of the Wage and Hour Division and the Public Contracts Division in a single unit, as the result of which the number of contacts with business men for investigations of plant conditions, wage-and-hour compliance, and so on is greatly reduced.

Collective Bargaining The third joint session of sand-and-gravel producers and ready-mixed-concrete manufacturers, held on Thursday afternoon, was devoted to problems involved in employer-employee relations. It began with a discussion by Executive Secretary Ahearn of the *Quarterly Survey of Wage, Hour and Collective-Bargaining Practices in the Sand-and-Gravel and Ready-Mixed-Concrete Industries* made by the National Sand & Gravel Association and the National Ready-Mixed Concrete Association. He prefaced his remarks by reciting the general policy of the National War Labor Board with respect to wage increases and pointing out that employers desiring to grant increases in accordance with the "Little Steel" formula must obtain approval from the board.

He drew the audience's attention to the provision that producers engaged in interstate commerce are required, beginning December 27, 1943, to pay all their workers at least 40 cents an hour and one and one-half that rate for all hours worked in excess of 40 in any one week. (Producers who do not ship their products across any state line, and are, therefore, not engaged in interstate commerce within the meaning of the act, are exempt from compliance with its provisions.) On specific stated holidays the time and one-half rate applies. Employment contracts calling for double time on Sundays are valid only when those Sundays are the seventh consecutive days in the same work week.

Mr. Ahearn warned his listeners that employers are obligated by statute to rehire workers returning from service in the armed forces of the United States and they must fulfill this obligation in spite of union contracts providing otherwise. This obligation to return a man to his original job applies only when that worker is physically and mentally able to assume and discharge his former responsibilities and to handle the work formerly performed by him. His seniority rights are protected by law.

Following Mr. Ahearn's discussion the National Sand & Gravel Association's trophies for accident-free plant operation were awarded to two producing companies. The Consolidated Rock Products Company was given the highest award for operating more than 100,000 man-hours without a lost-time accident, and the American Aggregates Corporation was given the award for the best record under 100,000 man-hours of accident-free operation.

Man-power Problem In a discussion of the manpower problem, W. W. Dennis, secretary of the Rock, Sand & Gravel Producers' Association of Northern California, said that the West Coast manpower-control program, which became effective September 1, 1943, was designed to maintain a balance between production and man-power demand. He spoke briefly of the procedures that must be followed to obtain help and the War Manpower Commission's requirements that must be met.

Herbert Jahncke, vice-president of the Flint Sand & Gravel Company of New Orleans, said that the sand-and-gravel industry in his part of the country is almost exclusively rural. There is a definite labor shortage in those areas because war plants and higher-paying industries draw labor away from the rural districts. Sand-and-gravel producers can not compete successfully against these better-paying employers in their competition to obtain workers, because their rural wages are naturally on lower levels than those prev-

alent in urban districts and they can not be raised without National War Labor Board approval. The hardship on rural sand-and-gravel producers is, therefore, a real one, since the United States Employment Service can not send workers to rural areas where wage rates do not exceed 50 cents an hour while war plants are demanding workers at 75 cents an hour. For common labor the going rates in Mr. Jahncke's state are from 40 to 55 cents an hour, skilled labor receiving from 70 to 90 cents.

Ready-mixed-concrete plants in the cities, Mr. Jahncke explained, pay from 40 to 60 cents an hour for common labor (one Texas company paying 70 cents), while truck-mixer drivers are paid from 50 to 75 cents. He cited some examples of the wages paid in different cities in the South. In Memphis truck-mixer drivers receive 50 cents an hour, common laborers 40 cents; in Mobile the drivers are paid 85 cents and common laborers 55 cents; in Tampa the corresponding rates are 70 and 50 cents respectively, in Nashville 50 and 40 cents, and in New Orleans 55 and 50 cents.

The speaker said that from 10 to 15 per cent. of sand-and-gravel and ready-mixed-concrete workers had been lost to the armed services and that deferments had been obtainable only for key men. White-collar workers have been taken by war plants which pay higher salaries. Mr. Jahncke said that he expects the man-power situation to become worse rather than better.

Describing conditions as they exist in the metropolitan Pittsburgh area, Ray V. Warren, engineering representative of the Western Pennsylvania Sand & Gravel Association of Pittsburgh, said that producers in his area have experienced no shortage of man power, largely because the wages being paid are comparable to those earned by workers in the steel mills. In fact, there is a surplus of men at present, particularly among truck drivers.

In employer-employee relations the question of seniority is a problem, as men having the longest employment records expect to be given 48 hours of work before men with shorter records obtain any work. The employers are studying a plan that will give each driver approximately 30 hours of work a week, calling upon them as they are needed. The rate of pay is 90 cents an hour. Except for a few men who work on the river, there have been no draft deferments and none have been requested.

Mr. Jahncke added the statement that in the rural areas it is necessary to do much overtime work, even up to 60 or 70 hours weekly, in order to raise the men's earnings to the point where they are competitive with those they might receive in war and other higher-paying industries. In the Pittsburgh district, according to Mr. Warren, overtime sometimes extends to 18 hours in a single day.

Wage Controls Raymond S. Smethurst, counsel of the National Association of Manufacturers, talked about the *Procedures of the National War Labor Board, Including Wage and Salary Controls,* although his remarks were confined almost exclusively to the "hold-the-line" wage-and-salary policy of the government, based on the Stabilization Act of October 2, 1942. He said that most of the confusion that has arisen in connection with the governmen's attempts to enforce the provisions of the law have been due to the desire to provide the flexibility required by the statute when it authorized the President to make adjustments in wages "to the extent he finds necessary to aid in the effective prosecution of the war or to correct gross inequities". As a result of this requirement, Mr. Smethurst said that there has accumulated a vast number of rulings, regulations, interpretations, directives, etc., which have become precedents for handling future applications for general and individual adjustments of wages, salaries, bonuses, commissions and even Christmas gifts to former employees now in the armed forces of the country.

Mr. Smethurst enumerated twelve types of wage or salary adjustments that are sanctioned by the law and the regulations issued under it. In five of these cases no adjustment may be made by the employer without having first obtained specific approval from either the National War Labor Board or the Treasury Department. These are changes made to correct maladjustments under the "Little Steel" formula which provided 15-per cent. increases over the rates of January 1, 1942; adjustments designed to eliminate substandard wages; adjustments made to correct gross inequities; increases given in cases where serious man-power shortages exist; and indirect increases, such as night-shift bonuses, vacations, travel-time payments, job reclassifications, changes from incentive payments to straight rates, etc.

There are four cases, according to the speaker, where wage or salary adjustments—that is, increases—can be made without specific approval, but they must meet fully the requirements of the regulations. These are *bona fide* promotions to higher-paid jobs as provided by the National War Labor Board's General Orders 5, 9 and 31; increases up to 40 cents an hour, or to 50 cents an hour where such rates are provided by state laws or by General Orders 7 and 30; increases made under incentive or piece-work plans; and increases made to equalize the rates paid to men and women workers under General Order 16.

The speaker mentioned two other cases in which approval may be necesary, especially where no established plan for making increases existed before the law was enacted. These are merit increases and length-of-service increases, both under General Order 31. If a plan for making such increases was in existence and in operation before October, 1942, the plan can be continued without approval, but in the absence of such an established plan increases for merit or length of service can be given only under the provisions of Order 31 or under a plan approved by the National War Labor Board.

Mr. Smethurst stated that, considering the tremendous task faced by those who are attempting to give effect to the stabilization objectives of the law and the division of responsibility brought about by the separation of jobs according to the annual rate of pay and the allotment of stabilization responsibilities to the National War Labor Board and the Treasury Department, the job has been done reasonably well. He said that a great problem facing those who want to continue the stabilization program is created by the type of increases that may be granted because it is considered politic to do so—overtime pay concessions to railroad workers, portal-to-portal pay to coal miners, etc.

Quoting Lloyd Garrison, a public member of the National War Labor Board, Mr. Smethurst mentioned several policies affecting employer-employee relationships which have been developed by the board. These are voluntary maintenance-of-membership clauses in collective-bargaining contracts and, in that connection, the development of new ideas of labor-union responsibility; recognition of the social necessity of cor-

recting substandards of living; the requirement that equal pay shall be given for equal work, regardless of the race, color, creed or sex of the workers; recognition of arbitration as an essential last step in the desire to provide adequate grievance procedures; the principle that the government will not commit itself or make decisions in union-labor cases while strikes are in progress.

The speaker then quoted from the report of the Special Committee of the House Investigating Executive Agencies of the Government made after an investigation of the National War Labor Board. According to Mr. Smethurst, this report drew attention to certain policies of the board that the committee considers dangerous to the system of "free enterprise", among which are the decision to fix wages in a disputed case without regard to the employer's ability to pay them; its insistence on its right to award back wages without granting the employer the right of judicial review; its assertion of the right to compel employer and employees to agree by contract to do what they might be willing to do voluntarily even when there is no legal obligation on their part to do so; its insistence on maintenance-of-membership and check-off clauses even when the employer is opposed to taking such action; its demand that employers and employees submit their disputes to arbitration; etc.

Mr. Smethurst sees in the activities of the National War Labor Board dangers that appear to him to be even more important, such as the encouragement it gives to the organizing of employees; its making of labor policies by executive order rather than by legislative action; tendencies toward the adoption of industry-wide bargaining and industry-wide settlement of labor policies; the failure to provide for greater responsibility on the part of organized labor to the public, individual employees and management; its assertion of federal supremacy over state laws; growing interference in managerial functions in such matters as work loads, work schedules, etc. He sees these as leading to more powerful organizations of labor and greater interference by government in the relations between employers and employees. He fears that these policies, developed in war time and for the purpose of winning the war, may be continued into peace time.

Back the Attack . . . Buy Bonds Every Payday

Manufacturers' Elect Aulmann About 50 members of the Manufacturers' Division were present at an early evening gathering of this group on Tuesday, January 25.

Theodore Aulmann (Eagle Iron Works, Des Moines) was elected chairman of the division for 1944 to succeed Perry Nagle (American Manganese Steel Division, Chicago Heights, Illinois). The six vice-chairmen who will serve during 1944 are: E. J. Goes (Koering Company, Milwaukee); Abe Goldberg, (Allis-Chalmers Manufacturing Company, Milwaukee); L. W. Shugg (General Electric Company, Schenectady); Frank B. Ungar (Ludlow-Saylor Wire Company, St. Louis); F. O. Wyse (Bucyrus-Erie Company, South Milwaukee); and J. Harper Fulkerson (Cross Engineering Company, Carbondale, Pennsylvania).

For next year's convention, the new chairman and V. P. Ahearn will form a committee of two to arrange the details of the annual reception and cocktail party.

H. M. Davison (H. M. Davison Company, Newark), who served the division as its first chairman, was present for the first time in several years. He spoke briefly in a reminiscent vein.

Priority information disseminated by the National Sand & Gravel Association was highly praised by members of the group, not only for the completeness and accuracy of the reports but for the promptness with which they are released.

Directors' Meeting At the annual meeting of the outgoing board of directors of the National Sand & Gravel Association, held at the New Yorker Hotel January 24, the day before the opening of the convention, it was revealed during a discussion of the survey of sand-and-gravel production by association members that the 1943 output of the same companies that reported for the preceding year was 25.8 per cent. less than it was in 1942.

The board members discussed a pension plan for the association's employees, approved it in principle and passed the problem to the executive committee with power to act.

The Nominating Committee proposed for election the names of Robert Mitchell for the presidency; H. S. Davison for the vice-presidency; and Harris N. Snyder for the secretary-treasurership. The nominations for the Executive Committee included, in addition to these officers, T. E. Popplewell, George W. Renwick, R. N. Coolidge and A. R. Shiely. For Directors at Large it nominated Floyd C. Fuller, A. R. Shiely, J. P. Eyre Price, Stephen Stepanian and Eric Ryberg. All these officers and directors were elected.

Executive Secretary Vincent P. Ahearn discussed the labor survey that had been proposed and urged the board members to co-operate by supplying helpful information.

Director of Engineering Stanton Walker reported on the fine co-operation that has continued between the University of Maryland and the association. Dean S. S. Steinberg was present for the university. Mr. Walker also spoke of co-operation with the National Ready-Mixed Concrete Association is establishing a research laboratory at the university and presented for consideration by the board a proposed agreement designed to give effect to the desire for such co-operation. The board authorized approval of the agreement in principle, the details to be worked out later.

Retiring President Otto S. Conrades was authorized to appoint a committee to study cost-accounting practices in the sand-and-gravel industry and to report at the mid-year board meeting.

Mr. Ahearn reported that the Office of Price Administration had made price studies in the sand-and-gravel industry in three states and had concluded, as a result, that the industry does not lend itself to the application of a specific-price order. He expressed his belief that competition protects the public from exorbitant prices and that government action is not needed. He added that efforts to obtain O.P.A. permission to raise prices because of increased labor costs may prove to be meaningless because the higher prices might not be attainable owing to the pressure of lower-price competitors.

On the subject of the depletion of mineral resources Mr. Ahearn said that the coal industry had been granted a straight-line depletion rate of 5 per cent. and the petroleum industry a rate of 27½ per cent. of gross sales but not to exceed 50 per cent. of net profit. Straight-line depletion allowances are intended to stimulate the opening of new deposits in localities where a shortage of any mineral exists or is threatened. The Treasury Department is

(*Continued on page 78*)

Orderly Post-War Liquidation of Government-Owned Machines Urged by Equipment Dealers

IN jam-packed sessions from January 17 to 20 the Associated Equipment Distributors observed their Silver Seminar at the Edgewater Beach Hotel, Chicago, with a registered attendance of 1,003 members and allied members. Said to be the most completely "down-to-earth" meeting ever held by the organization, the sessions were of necessity given over largely to discussion of the many vital war and post-war problems confronting the industry.

Round-table discussions, attended by distributors, manufacturers and government representatives, placed particular emphasis on planning in advance for the disposition of surplus army and navy construction equipment. This problem, with its intimate bearing on the entire post-war reconstruction and employment picture, is a matter of vital concern to everyone in the construction industry, and the AED is to be commended for its forthright approach.

At the close of the discussions on January 19, the following resolution was submitted and adopted:

"Whereas, the successful prosecution of the war has resulted in the production for and purchase by the United States Government of billions of dollars of construction equipment, and

"Whereas, this equipment is of exactly the same type as that manufactured and distributed for use in the construction of highways and streets, airports, dams, water-supply plants, sewage-disposal plants, buildings and other peace-time construction, and

"Whereas, at the end of the war the government will own a gigantic amount of surplus construction equipment for which it will have no use, and

"Whereas, the indiscriminate disposal or dumping of this material will destroy for several years to come the market for new machinery and result in idle factories, widespread unemployment and the liquidation of normal distribution and service channels in the construction-equipment industry, and

"Whereas, the Associated Equipment Distributors, through its membership, represents 90 per cent. of the manufacturers and distributors of the construction-equipment industry, who have a capital investment of over $1,000,000,000, and a normal annual gross sales volume of over $300,000,000, and employ tens of thousands of workers, and who engineer, furnish and service all the equipment used in war and peace-time construction.

Now, therefore, be is resolved that

"1. The distribution of such property should be made through established trade channels.

"2. The acquisition of large quantities of such property for speculative purposes should not be permitted.

"3. The prices at which any particular property or class of property is sold or leased should be uniform.

"4. Such property should be sold or leased at prices which will enable the government to secure a fair return.

"5. The sale or lease of such property should be at a rate which will not unduly disrupt trade and commerce.

"6. The welfare of small business enterprises should be considered wherever possible."

The convention also resolved to co-operate with all other groups within the industry or other industries seeking substantially the same solution to the surplus-equipment problem.

In addressing the fourth session of the convention on January 18, Major-General Philip B. Fleming, Administrator, Federal Works Agency, pointed to the series of hearings held in November and December by the House committee on Public Buildings and Grounds as a most hopeful development in relation to the whole problem of post-war readjustment. "The committee," he said, "is searching for the facts upon which to base a national policy, especially with reference to the part public-works construction can or should play in easing the transition to peace. It is useless to expect anything like full employment if construction is left out of the picture.

"There is," he continued, "little uncertainty in regard to the need for such construction. State and municipal facilities are suffering from deferred maintenance, highways are deteriorating and can not be properly repaired because of the scarcity of critical materials. A great many municipalities will be confronted with the necessity of enlarging or improving water-supply and sewage-disposal systems, hospitals, schools and other structures to accommodate population growth."

Problems connected with contract cancellation and renegotiation of government contracts were discussed in considerable detail throughout the meetings. In connection with cancellation it was brought out that arrangements will undoubtedly be made for giving interim financial assistance to contractors while their contracts are being terminated. Guest speaker Ellsworth C. Alvord of Washington, D. C., in discussing the revised renegotiation act, now pending before the Congress, asserted that the only constitutional method by which the government may retrieve excessive profits earned on war contracts is by taxation. He pointed out that excessive profits are virtually impossible under the present tax law, and that by renegotiating war contracts the government is simply imposing an inequitable form of taxation without representation.

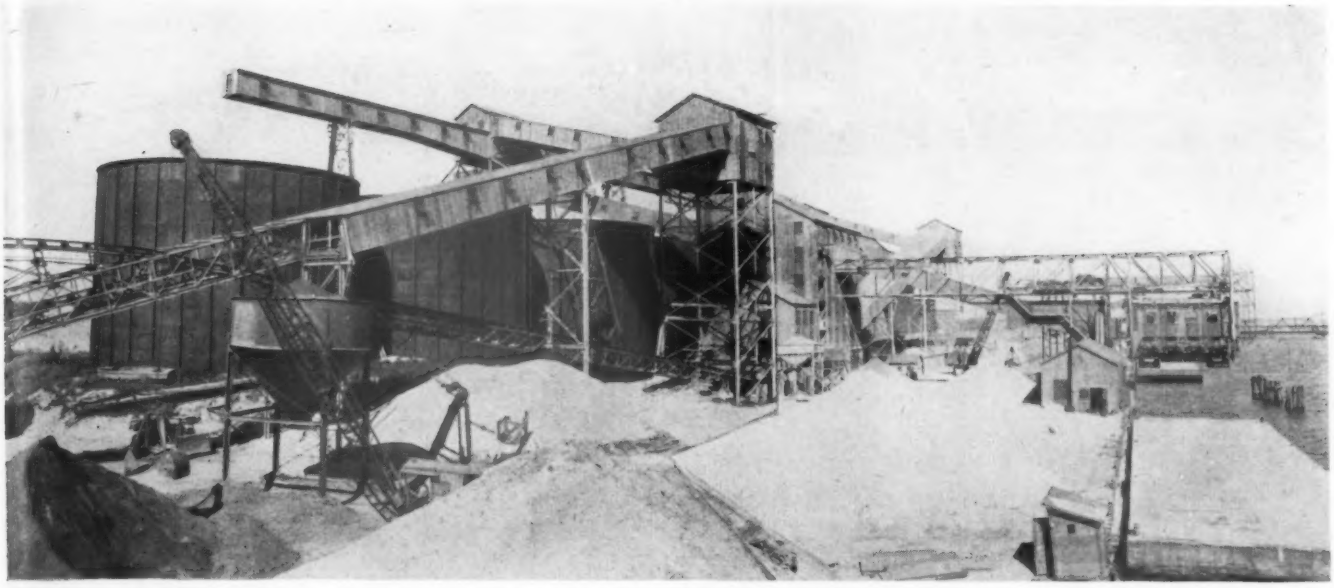
At the sixth session on January 19 G. W. Van Keppel of Kansas City, Missouri, was elected president of the organization, to succeed E. P. Phillips of Richmond, Virginia. A native of Grand Rapids, Michigan, Mr. Van Keppel has been in the equipment-distributing business in Kansas City for the past 20 years. During the past year he served as first vice-president of the A. E. D.

Other new officers for the forthcoming year are: H. O. Penn, executive vice-president; Frank B. McBath, first vice-president; A. E. Hahnan, second vice-president; and R. S. Patten, third vice-president. The treasurer, W. W. Bucher, and the executive secretary, C. F. Winchester, were re-named to hold their offices.

Other high-lights of the four-day seminar included an address by Charles M. Upham, Engineer-Director of the American Road Builders' Association, and a report by G. Donald Kennedy, vice-president of the Automotive Safety Foundation, on post-war planning for new and improved highways.

An excellent program of after-lunch speakers and after-dinner entertainment was provided under the direction of Vice-President F. B. McBath, chairman of the program committee.

Construction Equipment News, official publication of the Associated Equipment Distributors, has issued a twenty-fifth anniversary edition, consisting of 200 pages bound between silver-like covers.



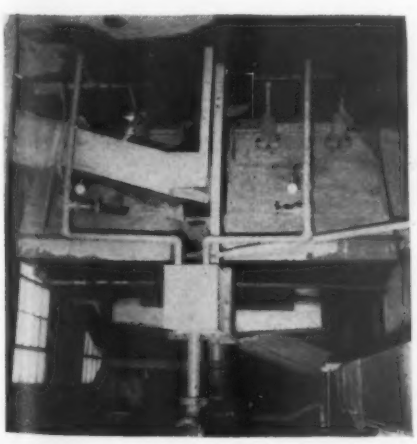
General view of Construction Aggregates plant at Ferrysburg, Michigan. Barge unloader at right; truck-loading bin at left.

Huge Gravel Plant at Lake Michigan Port Designed for Capacity of 1,200 Tons Hourly; Shipments Made by Boat

another P-Q exclusive

BEFORE the recent depression, when the demand for sand and gravel in the Great Lakes area was at the highest level yet known, there was conceived a plant which would exceed all existing operations in capacity, in the use of modern, efficient, mass-production equipment and methods, and in its ability to produce any desired gradation of aggregates. The construction of this plant was begun in 1929 but before it could be completed and put in full operation the depressed business conditions had forced the demand to such a low level that it was decided to delay its opening until the demand was again increasing. In 1936 it was deemed advisable to start operating the plant at a fraction of its capacity and this has been increased until the peak war-time demand resulted in the production of up to 700 tons per hour, which is, however, far below the 1,200-ton per hour designed capacity of the plant. This capacity can be attained on short notice by the installation of some additional equipment in the sand-classifying department.

By W. E. TRAUFFER



The two screw washers and dewaterers.

This plant, owned and operated by the Construction Aggregates Corporation, Chicago, is located at Ferrysburg, Michigan, a few miles south of Muskegon, near the mouth of the Grand River. The source of supply is an 800-acre property 15 miles upstream from the plant, where an 80-acre lake has been created.

Plants like this one, of course, do not just happen and there is a long and interesting history behind it. The deposit was first worked about 1880 when it supplied the materials for a concrete pavement in Muskegon, Michigan, which is said to be one of the first laid in this country. It was then operated on a small scale until the Continental Motors Corporation decided to enlarge its engine plant at Muskegon. As the owners of the deposit did not care to undertake the expansion necessary for the production of the 80,000 cubic yards of sand and gravel required, Continental, through an affiliated company, took over the property and built a plant. The Construction Materials Corporation, which made the sand fill on which the motor plant is built, acted in an advisory capacity on the mate-

Some of the storage conveyors with crushers in background.

rial production and its officials were so impressed with the quality and location of the deposit that they took it over in 1921 after the completion of this job. Studies had been made over a period of years which made it apparent that the importance of the distribution of the fines in a concrete mixture was being neglected by most technologists. Work began at once on plans for the construction of a plant which would make available to the entire Great Lakes area designed aggregate mixtures which would produce a high quality of concrete. In 1921 a 300-ton per hour plant was built for direct boat loading and to serve as a pilot plant for the large plant to be built later. The deposit was also thoroughly examined by means of drill and test holes and found to contain almost unlimited quantities of well-graded materials.

Crane loading portable-plant hopper.

When these and other necessary investigations and arrangements were completed the design and construction of this plant got under way. It was designed to distribute sand and gravel by means of self-unloading boats to any point on the Great Lakes and its intended 2,000,000-ton annual capacity was expected to be readily absorbed by that area which was then using about 12,000,000 tons annually. The feature of this plant was to have been the fine material classification department in which water classification was to make four fine fractions to be recombined as desired. This department was never completed and when operations were resumed after the depression it was found to be more economical to combine one size of dune sand and two sizes of lake sand with the two sizes of sand produced by the plant. These five sizes can be combined in any desired proportion within ½ per cent. of the required percentage of each ingredient. Sieve analyses are made of each shipment to check the accuracy of the blending system.

The overburden averages about 3 feet in depth and consists of sand and gravel and about 10 per cent. of clay and loam. A Caterpillar 60 tractor equipped with a bulldozer is used to push this material over the edge of the bank to a pile at the edge of the lake from which it is loaded into barges. At Ferrysburg this material is passed through a road-gravel plant which crushes it to pass a ¾-inch screen. The finished product contains about 50 per cent. crushed gravel and retains its original 10-per cent. clay content. It is sold locally for gravel roads, as a base for bituminous construction, etc. The same tractor is used at the plant for clean-up work.

Looking down on two of the sand classifiers.

The gravel deposit extends an average of 35 feet above the water level and is being excavated to 22 feet below that level. It contains an average of about 40 per cent. minus ¼-inch sand and is clean enough to be used for local concrete work without washing. There is enough variation in the gravel content of the deposit so that the demand for any type of material can be met by moving the excavator to a suitable part of it. A barge-mounted Marion crane with a Caterpillar D13000 Diesel engine and a 1¾-cubic yard Blaw-Knox clamshell bucket built up to 2-cubic yard capacity loads the material on barges for the plant. The crane loads an 850-ton barge in 2 hours and 20 minutes and is operated three 8-hour shifts daily during busy seasons with one craneman and a scow man on each shift.

Some of the screens used for fine sizing.

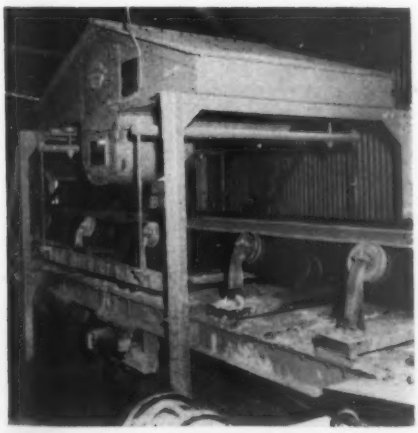
Six 850-ton steel barges are kept in operation; two are at the lake being loaded while two are enroute to or from the plant and two are being unloaded at the plant. A similar barge and several wooden barges

Crane unloading from barges to plant hopper. Main plant in background.

A view of the storage tanks. Gallery for four gravel-storage conveyors at extreme right.

are kept in reserve. The hauling between the pit and the plant is done by a tugboat with a 150-horsepower Kahlenberg Diesel engine. A larger steam tug and a smaller one are used for general service.

The stretch of river between the deposit and the plant has numerous turns and a government-owned dredge maintains the channel twice yearly. The only obstacles along this river are the main highway (U. S. Route 31) and railroad bridges just above the plant. There is a 20-foot channel 200 feet wide from the plant to Lake Michigan, a distance of 2 miles. The government has approved the dredging of a 300-foot-wide channel and a turning basin at the plant for completion after the war.



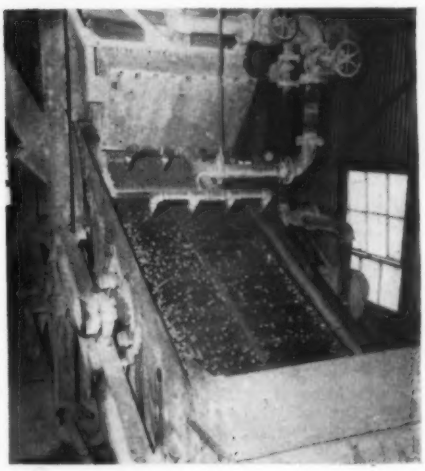
Weight-recording equipment on conveyor in barge-loading building.

One of the most interesting features of this plant is a barge-unloading machine which does not, however, lend itself well to the present part-capacity operations. With a few changes it can be put in operation on short notice when needed.

The present cycle of operations is better served by the use of a Marion electric shovel with a 2-cubic yard clamshell bucket which unloads the material from the barges either to storage piles or to a plant hopper. Working from either the piles or barges this machine feeds material to the plant raw-storage system at the rate of 300 tons per hour. By operating the crane and storage system three 8-hour shifts daily it is possible to operate the plant from storage at a capacity of 600 to 700 tons per hour for five 8-hour or four 10-hour shifts per week.

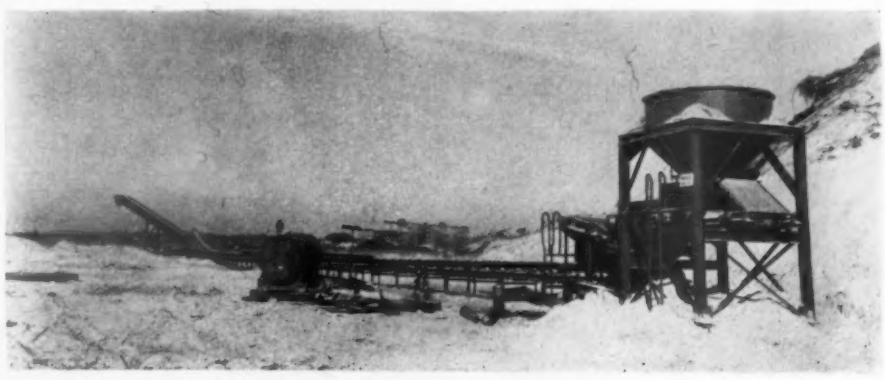
The material is discharged from the hopper on a temporary 30-inch by 105-foot belt conveyor (P1). This in turn discharges it on the main 48-inch by 156-foot belt-conveyor (P2) which was designed to carry material from the barge unloader direct to the screening department or to the raw-material storage tank. At present all the material is moved to storage by means of 48-inch by 187-foot belt conveyor P3. The storage consists of a 20,000-ton-capacity cylindrical steel tank of extra-heavy construction.

The raw material is recovered from this storage on a 48-inch by 127-foot tunnel belt-conveyor (P4) which discharges it at right angles on a 48-inch by 184-foot inclined belt-conveyor (P5). This in turn discharges it at right angles on a 48-inch by 102-foot belt-conveyor (P6) to the main screening building. From this conveyor the material is discharged into two by-pass dividing chutes in which it is saturated with water and distributed to six 4- by 8-foot double-deck vibrating screens, two of Robins and four of Huron manufacture. Space has been left for two additional screens. They are usually equipped with 1-inch and ½-inch wire cloth on their top and bottom decks, respectively.



The double-deck rinsing screens.

The oversize from these screens is discharged on two 24-inch belt-conveyors (G1 and G2), which are, respectively, 41 and 15 feet in length. These discharge the plus-1-inch gravel on a 4- by 8-foot Robins 2-deck screen on the floor below. This is usually used as a one-deck screen with 2-inch cloth on its top deck



Conveyor and equipment used to load out core sand for plant in background.

but a 1½-inch bottom deck can also be installed depending on whether 2- or 1½-inch gravel is in greater demand.

If all the gravel is to be crushed to minus-1½-inch size, both decks are used and the gravel passing over them is discharged, respectively, into a 9- by 24-inch Wheeling jaw crusher and an 18- by 24-inch Pioneer roll crusher.

If minus-2-inch crushed gravel is desired, as is usually the case, only the top deck of the Robins screen is used and the oversize coming off it is split to the two crushers. In either case the crushed gravel is returned by a belt-bucket elevator to the flume over the first set of six screens. This closed-circuit arrangement introduces a certain amount of crushed material into every size of aggregate produced.

In either case, also, the uncrushed undersize from the single Robins screen is discharged on a 48-inch by 25-foot belt-conveyor (G9). Soft stone and other deleterious matter is picked out and dumped on a pile outside the building. The picked gravel is discharged from the picking conveyor (G9) to a series of three 24-inch belt-conveyors (G11, 12 and 13) which are, respectively, 276, 94, and 216 feet long. These three conveyors, and three similar series of conveyors carrying other sizes of aggregates, run parallel through the same galleries to the top of the finished-material storage structure.

When this gravel is minus 2 inches in size it is discharged from the last of the three conveyors (G13) to a 4- by 8-foot Huron screen which makes two sizes of gravel, one going to storage tank Number 1 and the other to tank Number 2. When the material is minus-1½-inch gravel, the screen is by-passed and it drops from the conveyor into tank Number 2. This conveyor has a tandem drive so arranged that an overhang at one pulley discharges the gravel on the screen. A pant-leg chute under the screen diverts the fine gravel direct to Tank 2 and the fines off the screen drop on another reach of the conveyor extending beyond the tandem drive.

The "J. R. Sensibar" taking on a load at the plant.

Tugboat pushing loaded barges approaching plant.

The ½-to 1-inch gravel off the bottom decks of the six sizing screens is carried on a 24-inch by 41-foot belt-conveyor (G4) to a series of three 24-inch belt-conveyors (G14, 15 and 16), which are, respectively, 263, 105 and 41 feet long. This gravel is discharged from the last of these conveyors (G16) into storage tank Number 4.

The minus-1½-inch gravel passing through the bottom decks of the first six screens drops to the six 4- by 8-foot Link-Belt 2-deck screens under them. These are equipped with 5/16-inch cloth on their top decks and half .264-inch and half 4-mesh cloth on their bottom decks. The 5/16- to ½-inch gravel off their top decks is carried on a 24-inch by 45-foot belt-conveyor (G1) to a series of three 24-inch belt-conveyors (G17, 18 and 19) which are, respectively, 271, 99 and 41 feet long. This gravel is discharged from the last of these three conveyors (G19) into storage tank Number 3.

The 4-mesh to 5/16-inch gravel off the bottom decks of the second set of six screens is carried on a 24-inch by 64-foot belt-conveyor (G6) to a belt-bucket elevator which in turn discharges it on a 4- by 8-foot, 2-deck Link-Belt screen. This has ¼- and ⅛-inch cloth on its top and bottom decks, respectively.

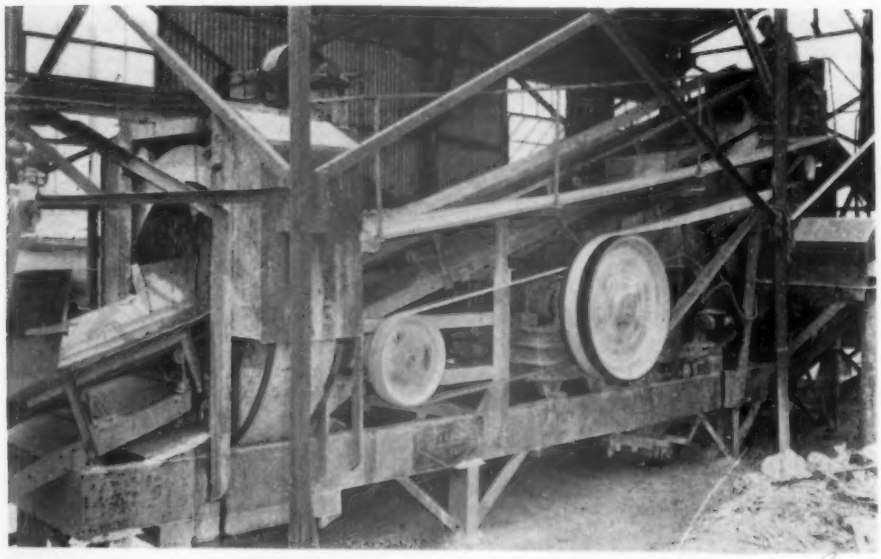
The ¼- to 5/16-inch gravel on the top deck of this screen is carried on a series of three 24-inch belt-conveyors (G20, 21 and 22) to storage tank Number 5. These con-

Two banks of screens used for first sizing of gravel. Feed flumes are above.

veyors are, respectively, 296, 110 and 125 feet long.

The ⅛- to ¼-inch material off the bottom deck of this screen is chuted to a pile outside this building from which it is transferred to a stock-pile or into bins for truck loading.

The minus-⅛-inch material passing through the bottom deck of this screen together with the minus-¼-inch material through the bottom decks of the second set of six screens



Portable plant for crushing and screening road gravel.

goes to the sand-classifying department where it is split as desired to two 20-inch diameter by 16-foot Weller double-screw dewaterers and three Link-Belt Rotoscoops, two 12 feet and the other 15 feet in diameter.

If desired two of the last set of six screens can feed to the screws for making mortar sand, which they discharge outside the building for stock-piling. Ordinarily, however, when making concrete sand, all the sand goes to a common flume from which it is discharged by means of a series of chutes and baffles to the screws and Rotoscoops according to their capacities. The product of two of the Rotoscoops is discharged direct, and that of the third by means of a 24-inch by 41-foot belt-conveyor, to a series of three 30-inch belt-conveyors (S9, 15 and 16), which are 328, 319 and 96 feet long, respectively. From the last of these conveyors (S16) the sand is discharged on a 30-inch by 87-foot reversible shuttle belt which can be moved to discharge from one end into storage tank Number 7 and from the other end into storage tank Number 8.

The pulleys and idlers are also in place at each end of the shuttle conveyor for 30-inch by 125-foot belt-conveyors to carry sand to storage tanks Number 6 and 9. Belts can be installed on either of these conveyors on short notice when they are needed.

The nine cylindrical steel storage tanks are all 84 feet in diameter and are arranged in a single row. Tank Number 1 is 40 feet high, Number 2 is 54 feet high and Numbers 3 to 9, inclusive, are 61 feet high. Material is discharged into each tank from a sufficient height for a full cone to be built up to the top rim of the tank.

As previously stated, the pit-run material averages about 60 per cent. gravel and 40 per cent. sand. The plus - 12-inch gravel which is always crushed amounts to from 1 to 2 per cent. of the total. Usually the products of the plant and their percentages are about as follows:

2-inch to 1½-inch... 5 per cent.
1½-inch to 1-inch... 10 per cent.
1-inch to ½-inch... 15 per cent.
½-inch to 5/16-inch...15 per cent.
5/16-inch to ¼-inch... 10 per cent.
¼-inch to ⅛-inch.... 5 per cent.

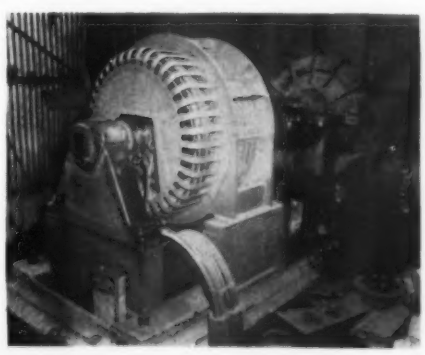
If desired, the ½-inch size with the two smaller sizes may be screened as one to make a ½- to ⅛-inch aggregate. In like manner the 5/16-inch material can be screened to retain the ¼- to ⅛-inch material. This gives the choice of producing a uniform pebble size of the three smaller aggregates, or graded sizes.

The concrete sand is screened over a combination of .264-inch and 4-mesh screens and the mortar sand over ⅛-inch screens. The material retained on the ⅛-inch screens is identical to the ¼- to ⅛-inch gravel above, and is an additional source of this size. When mortar sand is being screened the percentages are approximately 60 of the sand and 40 of the ¼- to ⅛-inch material. Available for blending are a minus-10-mesh lake sand and a minus-30-mesh dune sand.

Material is reclaimed from storage through four to five openings under each tank to a 48-inch by 952-foot belt-conveyor (F1) in a

Flumes and split chute where water is added to material going to first set of six screens.

Main-conveyor drive consisting of 150-horsepower motor and speed reducer.



The 24-inch pump and 100-horsepower motor which supply much of the water needed at the plant.

tunnel under them. Five feeders mounted on self-propelled carriages on rails in this tunnel can be moved to any opening to give any desired blend of from 2 to 5 materials or two feeders can be used under any one bin when loading one size only. Each feeder consists of a hopper with an arm which is raised to engage the sliding gate under the opening and opens it any desired amount by means of a ratchet. A feeder belt

The 2-cubic yard barge-mounted crane loading one of the scows at the deposit up river from the plant at Ferrysburg.

under the hopper discharges the material on the reclaiming conveyor. This belt has a regulated opening and is driven by a variable-speed motor through a variable reducer to insure accurate control of the rate of feed. The feeder carriage locks in place while in use.

The tunnel belt-conveyor (F1) carries the material to the rinsing building where it is split to four Simplicity 4- by 8-foot double-deck screens equipped with Binks washing-spray nozzles. These screens have ¾-inch hexagonally — perforated plate on their top decks and ¼-inch wire cloth on their bottom decks. The washed gravel from these screens is discharged on a 48-inch by 263-foot conveyor (F2), which is at right angles to the tunnel conveyor (F1). When sand is being shipped the screens are by-passed. The waste from these screens is incorporated in the road gravel or sold locally for parking lots, etc.

Conveyor (F2) carries the material to the boat-loading building, where it is discharged on a 48-inch by 38-foot horizontal belt-conveyor (F3), which is equipped with a Merrick Weightometer for weighing all the shipments. The final shuttle loading belt-conveyor (F4) is 48 inches wide by 84 feet long and can be moved to load a boat evenly across its entire width. All the finished material is checked at frequent intervals for screen analysis, etc.

The loading system is designed for a capacity of 3,000 tons per hour and has loaded out as much as 3,300 tons per hour when speed was assential. A loading rate of about 2,200 tons per hour is usually maintained for both blended materials and single sizes.

In the plant yard there are 15 truck-loading bins, mostly Butler, which range in capacity from 30 up to 500 tons each. These are used for the various sizes and blends of aggregates for which there is a local demand. The material for these bins is loaded on a barge and is then unloaded by one of the several crawler cranes to stock piles at the unloading dock or direct to the bins. In addition to the cranes mentioned elsewhere in this article there is a Link-Belt 2-cubic yard crawler crane powered by a Climax gasoline engine which is used for this and other purposes.

The road gravel is unloaded from barges at one end of the plant dock and is then fed to the hopper of a Diamond Iron Works portable crushing and screening plant by a General ⅝-cubic yard crawler crane with a Buda gasoline engine. The finished product is transferred to stock piles and to a 300-ton truck-loading hopper by a Marion 1½-cubic yard crane with a Caterpillar D-13000 Diesel engine. A Syntron electric vibrator on the cone bottom of this bin keeps the material flowing freely.

The company operates a small laboratory in which regular control tests of cross-sections of the material produced are made. Routine chemical tests are also made.

The demand for core sand has been so great in recent years that the plant has been used occasionally for short periods for its production. This material is being secured from a deposit across the river from the plant. It contains millions of tons of sand in dunes up to 200 feet in height. Some overburden and many trees, bushes, etc., must be removed. The sand is loaded by a crane into a hopper which is moved along with it. A belt-feeder discharges the sand from the hopper on a root extractor which is essentially a traveling grizzly with bars spaced 1 inch apart. From this the sand is discharged on a 24-inch-wide sectional belt-conveyor which at present is 325 feet long. The sand is discharged from this conveyor over four stationary piano-wire screens, with .214-inch openings, which remove any remaining undesirable material. Barges are loaded by means of a 48-inch by 45-foot boom belt-conveyor.

At the plant the core sand is processed, being unloaded from the barges in the same manner as are the sand and gravel. Instead of going to the raw storage, however, it is discharged from the main conveyor direct to the screens. These are equipped temporarily with wire cloth to remove any remaining trash. The sand is then sized and dewatered in the Rotoscoops and is carried on belt-conveyors S9 and 15 to storage tanks Numbers 6 and 9. The Rotoscoops give accurate control of the fines, water, overflow, etc., and the entire system makes possible the production of a uniformly high grade of core sand with the excess of impurities eliminated.

No trouble has been experienced in producing 200 tons per hour of this sand and it is expected that an output of 300 tons per hour will be possible when 30-inch belt-conveyors are installed at the pit.

The boats used to haul the company's products are leased for the season from various transportation companies. The largest of these is the J. R. Sensibar which is rated at 7,179 gross tons but has actually carried 9,591 tons. This boat, which was described in these pages March 25, 1931 is still equipped for dredging and can be used for this purpose at any time. The company owns two sea-going hopper barges, the *Sandcraft* and the *Sandmaster,* but these are not used for hauling from this plant.

The J. R. Sensibar and other boats over 400 feet in length now turn around in the south channel of the river below the plant and are towed stern first to the plant by a steam tug. These boats deliver the company's products to various points on the Great Lakes including Chicago, Milwaukee, Ludington, Detroit, Toledo, etc. Many important projects have been served in this manner including the new Soo locks. In Chicago deliveries are made to the comjany's 5 docks on the Chicago and Calumet Rivers.

The design and construction of the plant at the time it was built were far ahead of current practice and there are, even to-day, few plants with which it would not compare favorably. Except for the wooden floors and walkways, the plant is entirely of steel and concrete construction. Its most interesting feature, perhaps, is the fact that it was built on swamp land. Only a portion

(*Continued on page* 74)

Tailgate Spreaders on Quarry Trucks Apply Agstone to Land at Small Cost

General view of the Rush County Stone Company's plant.

another ON THE SPOT report

A FEW MILES southeast of Indianapolis, at Moscow, Indiana, the Rush County Stone Company is working what is claimed to be one of the finest deposits of agricultural limestone in the middle west. A small quarry had been operated on the site many years ago and the late William L. Heston, Indianapolis ready - mixed - concrete

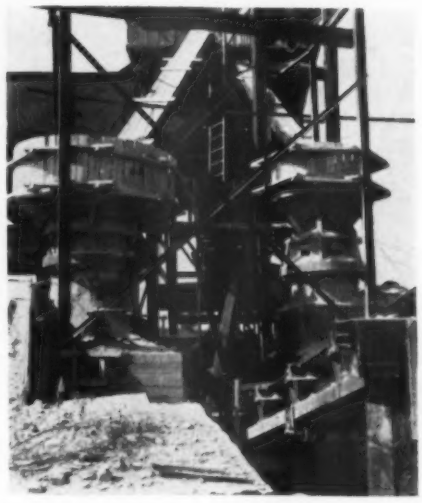
By HARRY F. UTLEY

producer, happened upon it one day, took samples of the stone and submitted them for analysis. Besides proving to be extremely high in available lime oxides, he learned that the stone was sufficiently hard to yield desirable commercial aggregates.

So Mr. Heston acquired the tract and, when he erected a new, modern ready-mixed-concrete plant in Indianapolis a couple of years ago (*P&Q*, February, 1943, pages 82-85) he shipped the Heltzel steel bin and supporting structure to the Moscow site, purchased considerable additional equipment, and began building the present plant. Mr. Heston died before the plant was completed, however, and ownership of the stone company passed to a partnership composed of Mrs. Heston's father, M. A. Hinsey, and R. C. Prall.

A face about 30 feet in height is being worked in the quarry, the 3 to 4 feet of overburden being removed by a Lorain ¾-cubic yard gasoline shovel and trucked away. Drilling is done by contract, the 4-inch holes spaced 14 feet apart and 12 feet back from the face being loaded with du Pont Red Cross 40-per cent. dynamite and detonated, 10 holes to a shot, every 10 days or so. These blasts bring down an estimated 4,000 tons of well-fragmented stone requiring no secondary breakage. Two motor trucks, a White and a Diamond T, carry the quarry-run material in 4-ton loads to the primary-crushing hopper, the haul averaging 1,000 feet.

All the stone is passed through the primary crusher, an Allis-Chalmers 13-inch Superior McCully machine, and is dropped on the plant conveyor. This 24-inch by 170-foot Cincinnati Rubber belt carries the material to the Simplicity vibrating screen at the top of the plant. This is a 3- by 10-foot unit with 3½ decks, the top deck scalping off the 2-inch and larger material which is chuted to an Austin Number 4 gyratory crusher. The $\frac{7}{16}$- to 2-inch material off the second deck is chuted to another gyratory crusher, a Traylor-Stearns multi-stage fine-reduction machine with a 3½-inch feed opening, which makes the greater part of the fine material sold for agricultural purposes. The



The two secondary crushers with feed chutes from screen.

One of the trucks equipped with a tailgate spreader being loaded. Superintendent Wallace P. Carpenter in foreground.

Quarry view showing stripping shovel, well-drill, and loading shovel.

two gyratories all located side by side at ground level and are in closed circuit with the main belt, feeding their products to a 24-inch return belt-conveyor which discharges on the main belt about half way up the incline.

The finished products from the screen, including the minus 3½-inch agricultural stone, are stored in the three compartments of the Heltzel 150-ton bin and in an auxiliary 40-ton steel jack-leg bin alongside the main structure. The 150-ton bin loading gate uses the same levers to

The 3½-deck vibrating screen which scalps and sizes the stone.

control the discharge of material into motor trucks as were originally used when it was an integral part of the old Indianapolis batching-plant installation. A 2- by 6-inch rinsing screen has been added at the discharge opening, however, to wash the aggregates during the loading operation if desired. Surplus material is placed in open storage by dump trucks and is later reclaimed with a bucket-loader.

The plant has a production capacity of 60 tons per hour. Its total installed horsepower is 210, the largest motor being a 75-horsepower unit which drives the Traylor-Stearns crusher. Power is purchased from the Southeastern Indiana Power Company, and is stepped down from the "high line" to 440 volts by transformers at the plant. Water is pumped from near Flat Rock Creek by a Fairbanks-Morse pump.

Besides producing a fine grade of agricultural limestone, the company has made it a practice to make it easy for farmers in that area to utilize it. Shortly after the plant began operating the company purchased five Flink tail-gate self-feeding spreaders for installation on its trucks so that the stone could be spread on the land if the purchaser so desired. Most of the buyers are eager to pay the small additional cost of spreading and nearly all the output is trucked away in spreader trucks and delivered on the land ready to be plowed under. A ceiling price of $1.15 per ton f.o.b. plant prevails. For hauling within a radius of 3 miles the price is $1.30 per ton. Where the trucking distance is greater than 3 miles, the hauling charge ranges from 3 to 5 cents per ton-mile. A flat price of 25 cents per ton is charged for spreading.

Wallace P. Carpenter is the superintendent of the plant.

Construction *(from page 72)*

of the swamp muck was first removed and a sand fill was then placed by the patented Sensibar method, which has been used so successfully in many places on the Great Lakes, no piling being used under any portion of the plant. The fact that there has been very little settlement in any part of the plant in spite of the tremendous load on the foundations testifies to the value and safety of this method.

All the belt-conveyor idlers and pulleys in this plant were supplied by Robins Conveyors, Incorporated. The belting for most of the conveyors was furnished by the Hewitt Rubber Corporation but some Goodrich belting is also used. Many of these conveyors are endless, having been vulcanized by the Goodrich process. Most of them are driven at their head pulleys by Westinghouse electric motors through Falk reducers. A few Jones reducers are also used. Tandem pulley drives are used on a few of the longest conveyors which carry heavy loads. Conveyors P2 and F1 are driven in this manner at their head ends and conveyors P3, S9, S15, and F2 are similarly driven at their tail pulleys.

All the pulleys are of ample size and diameter to prevent the belts from slipping or riding over the ends. The drive pulleys are lagged and a tire groover was used to cut herringbone grooves across the lagging to insure further against slippage. These measures reduced the amount of belt tension necessary for efficient operation of the conveyors, resulting in longer belt life.

Most of the water used in the plant is supplied from the river by a 24-inch Manistee centrifugal pump located in a building near the barge unloader. This has a capacity of 11,500 g.p.m. and is driven by a 600-horsepower Westinghouse synchronous motor. At present the full capacity of this pump is not needed and it is being operated with a smaller impellor than the one designed for it. The rinsing water used at the ship-loading end of the plant is supplied by two 6-inch American Well Works pumps rated at 1,100 g.p.m. each. Binks spray nozzles are used throughout the plant.

The electric power for this plant is purchased from the local power company at 440 volts. The efficient electrical design of the plant and the use of the synchronous pump motor help to maintain a leading power factor close to 100 per cent. All the motors are automatic-sequence-controlled. Power cables are underground wherever possible.

The main office of the Construction Aggregates Corporation is at 33 North La Salle Street, Chicago. The officers are: J. R. Sensibar, president; J. M. Balk, vice-president; R. A. Brinkman, vice-president; Ezra Sensibar, secretary; L. A. Holleb, treasurer. V. A. Brink is general manager, W. J. Wipperfurth is plant superintendent and William Nauta is chief engineer.

AIR COMPRESSORS

Part III — Lubrication and Maintenance

By C. W. GIBBS

Compressor Engineering Department,
Ingersoll-Rand Company

NO one will deny the importance of compressed air in the cement and quarry industry. A compressor shut-down is truly serious. Every compressor must be kept running every hour it is needed and that now means more hours than ever before. Even though compressors are rugged machines they must have intelligent attention and care. Maintenance is therefore of ever-increasing importance.

Maintenance fundamentally consists of eternal vigilance in checking small items on a regular inspection schedule and seeing that conditions that could prevent 100 per cent. availability are never allowed to develop.

Regardless of the compressor's type or size the two most important items to be constantly checked are lubrication and cleanliness. The latter is especially important around a quarry or cement plant where unusual dust concentrations are found in the air.

Right at the start let it be said that maintenance is likely to be best where it is the responsibility of one man or one group of men. They should be equipped with the necessary tools, instruments if necessary, and with complete manufacturer's instructions for each item of equipment under their care.

Compressor manufacturers always furnish detailed instructions for their compressors. These should be followed carefully. Additional information is available in *Trade Standards,* published and sold by the Compressed Air Institute, 90 West Street, New York.

Lubrication Lubrication is vital. No compressor will run without it. The exact oil to be used depends somewhat on the type of unit and the conditions under which it operates. Recommendations by reputable oil companies should be followed. The oil recommended will usually seem expensive in cost per gallon since only the best should be used in compressors, but the quantity used is so small that the real cost is insignificant.

Faulty lubrication is the cause of most compressor troubles. They are usually traceable to a low quality oil or too much oil; seldom is too little oil used.

Cylinder walls and valves should be kept coated with oil but not wet. The oil should not lie in the valve pockets. A small quantity of good oil will assure the desired results. Although a large quantity of poor oil may lubricate, it will inevitably result in the deposit of excessive carbon in the passages and on the valves, then leaky valves, high temperatures and extremely dangerous conditions for continued operation. Use only the best oil and use as little of it as possible.

When starting a new unit with controllable feed use oil more generously for a week or so, then adjust to the minimum, and check the valve condition frequently.

When the compressor is of the vertical type with cylinder lubrication by splash from the crank case, it is more difficult to control the cylinder lubrication. Here the range of crank-case oil levels specified by the manufacturer should be religiously maintained. These compressors frequently operate at higher speeds and temperatures than the larger units using separate force-feed lubrication to the cylinders and for those reasons, too, should be lubricated with only the best oil. The maximum crank-case oil level should never be exceeded. Too much oil is too bad.

Crank-case oil should be changed in accordance with the type of service and design of the compressor. Its life can usually be expressed in hours and one should be guided by the manufacturer's recommendations for changes.

Some of the larger vertical or V-type units have "constant-level" lubrication. Here the crank case is so arranged that a pump feeds oil into a pan beneath each crank pin. The oil level can not rise above the overflow of the pans and therefore the splash to the cylinders is controlled. This is a desirable arrangement in that it eliminates all the danger of over-lubrication and much of the danger of under-lubrication.

Cleanliness Cleanliness involves both the internal and external surfaces. External cleanliness is first of all "good housekeeping". There is unfortunately a tendency to neglect this now because of

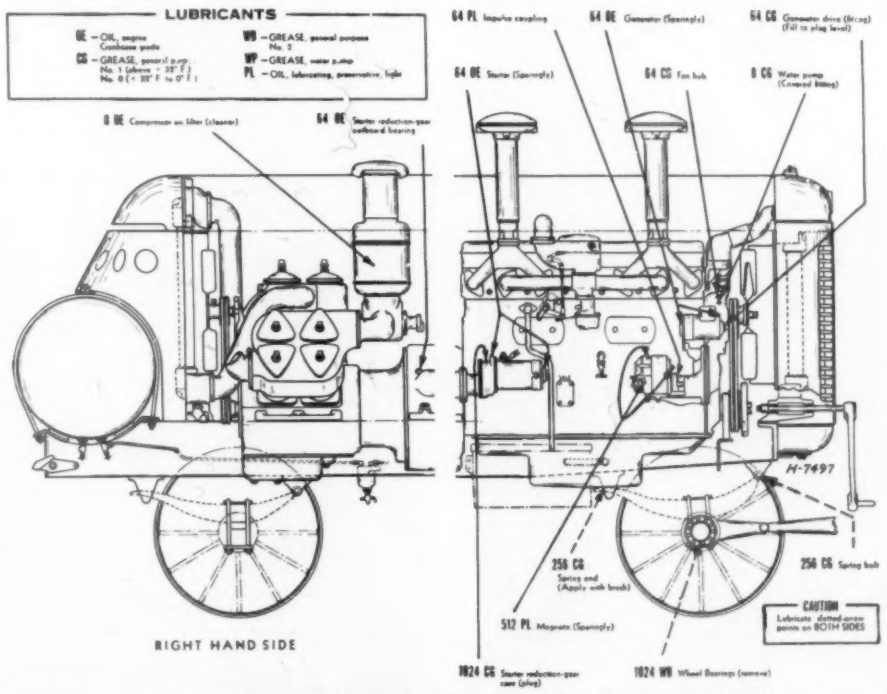

LUBRICANTS
GE – OIL, engine Crankcase grade
CG – GREASE, general purpose
WB – GREASE, general purpose No. 2
WP – GREASE, water pump
PL – OIL, lubricating, preservative, light
8 GE Compressor air filter (cleaner)
64 GE Starter reduction-gear outboard bearing
64 PL Impulse coupling
64 GE Generator (Sparmplg)
64 CG Generator drive (Fill to plug level)
64 GE Starter (Sparmplg)
64 CG Fan hub
8 CG Water pump (Covered fitting)
H-7497
256 CG Spring end (Apply with brush)
256 CG Spring hub
512 PL Magneto (Sparmplg)
CAUTION Lubricate dotted-arrow points on BOTH SIDES
1024 CG Starter reduction-gear cam (plug)
1024 WB Wheel Bearings (remove)
RIGHT HAND SIDE

Figure 1.—Typical manufacturer's instructions for lubrication of a portable air compressor. The numbers near the start of the arrows indicate hours operation between lubrications, while the letters represent the lubricant type.

the lack of manpower. This can be serious, particularly with certain types of compressors. Two-stage air-cooled units dissipate the heat of compression through fins on the cylinders and through finned intercoolers. These should be blown out frequently. Dust and dirt on a radiating surface is like a blanket on a bed. It keeps the heat in. Keep the fins and radiators of air-cooled units clean.

Internal surfaces are best protected by the use of effective air filters and proper lubrication, as mentioned before. In no other ways can foreign materials get into the unit.

Air filters are of three general types: (1) oil-bath; (2) viscous impingement, and (3) dry-felt cloth. Each has its own strong points. Selection for any given compressor type is dependent upon a number of factors, such as the prevailing atmospheric conditions, type of control, accessibility, piping or plant layout, etc.

Figure 3.—Blow out the fins of air-cooled intercoolers and cylinders. Keep them clean; dirt accumulations prevent heat dissipation. Set up the machine in a well-ventilated location.

Figure 2.—Maintain oil level between proper points at all times. Change oil according to service and instructions.

It must be remembered that filters collect dust and dirt. They must be cleaned and serviced. Without frequent attention they can not function effectively.

While on this subject of cleanliness, one must not neglect the internal condition of the tubes in intercoolers and aftercoolers or the scaling of water jackets on water-cooled compressors. The cooling water must, of course, be as clean as possible and its temperature should be kept below that of the outlet where excessive scaling occurs. The tubes and jackets must be periodically inspected—not usually a difficult or lengthy job—and if necessary, should be cleaned.

Portable compressors present a combination of all the above elements, with air-cooled compressors driven by water-cooled engines with a self-contained radiator to cool the water, being the usual design. All that has been said above applies to portables, possibly with greater emphasis because of the severe out-of-door conditions to which they are exposed and the less frequent opportunity for a thorough inspection and overhaul.

Valves The valve is the heart of the compressor. It takes the most severe treatment. It must open *and* close as many as 800 or more times a minute—once for each revolution. It must be tight against pressure and must withstand high temperatures and repeated shock.

Compressor valves are carefully designed to meet these exacting requirements and are built of the best

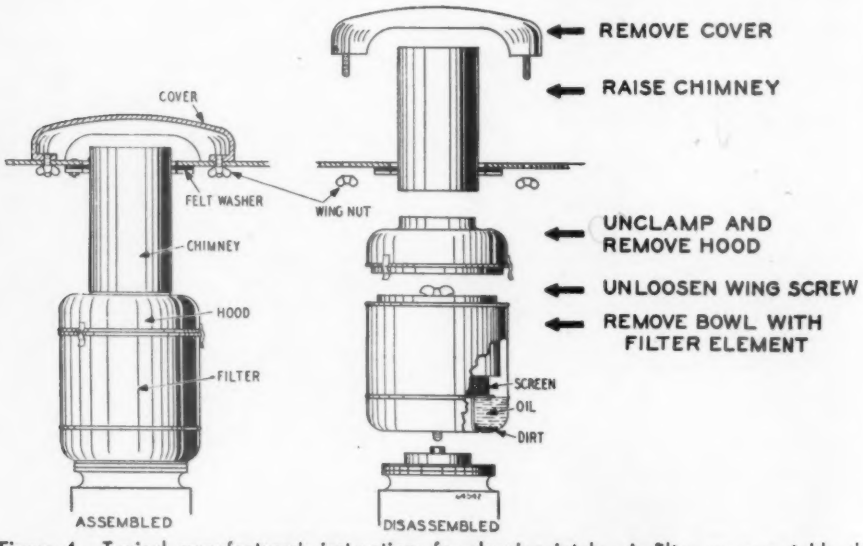


Figure 4.—Typical manufacturer's instructions for cleaning intake air filter on a portable air compressor. Exploded view shows sequence of operations.

materials. They can not however, operate indefinitely and they do require routine cleaning and inspection.

The dirt from the intake air which collects on the inlet valves, is usually soft and can be washed off. On the discharge valves there is often a hard carbon formation, indicating poor oil, too much oil or excessive temperatures. This dirt must be cleaned off periodically by removing the valves, soaking them in kerosene or a similar solvent and giving them a stiff brushing. Be sure they are dry before they are replaced. Scrape lightly where this is absolutely essential. Always inspect carefully for broken valve plates or springs. These *must* be replaced.

Do *not* take the valve apart unless it can not be cleaned otherwise or unless it needs repair. If disassembly is required, note carefully the exact arrangement of the parts so that they may be reassembled in the same order. Never interchange parts between valve assemblies. Keep the same assembly together at all times, except for replacements.

Broken or leaky valves, or valve assemblies improperly seated in the cylinder allow air to flow backward through the opening. This always results in overheating. Discharge-valve leaks are particularly dangerous.

Leaky intake valves may be detected readily because their covers will feel warmer than those of other inlet valves on the compressor. It is assumed each valve has its own cover. If it has not, discovery of leaks is complicated somewhat.

Discharge-valve leaks also can be detected through excessive cover temperatures, but are not as obvious because all the discharge valves are hot. The leaky ones get "hotter" and an experienced operator will soon detect those which need attention.

In a multi-stage compressor the intercooler pressure is an excellent guide to the condition of the valves, but must not be absolutely depended upon. A cooler pressure higher than normal usually indicates a leakage in the high-pressure valves, while low cooler pressure shows low-pressure-cylinder valve trouble.

Figure 6.—Blow safety valves by hand daily. Test them for pop-off point twice a year by raising the air pressure slightly.

Figure 5.—Keep a valve assembly together. Except for replacements, put the valve back on its original seat after cleaning.

A satisfactory valve- inspection program involves cleaning and checking at least half the valves in a unit each two to four weeks. Consult the instruction book for any special valve care needed.

Bearings Bearing adjustment is likely to be overdone. A bearing should not be touched unless it is obviously out of adjustment. The distance between the fixed and moving parts is small and only an oil film prevents actual contact. A properly lubricated bearing wears but little. But, tighten it too much and the oil film becomes too thin to prevent metallic contact and the bearing seizes or heats. Allow too much play and pounding occurs, which will also damage the bearing.

Study the manufacturer's instructions and adjust the bearings only when necessary.

Control Devices On the regulation or control of the compressor falls the responsibility of maintaining the required air pressure within reasonable limits up to the

capacity of the unit. Most regulating devices are subject to adjustments, but these must be carefully made. It is wise to study the instruction book which should describe in detail the functioning of the control supplied with the compressor.

If a unit is operating automatic-stop-and-start, it should have as wide a range as can be allowed and must be connected to sufficient receiver volume to prevent too frequent starts. A limit of 12 starts per hour is set by some electrical manufacturers as the maximum for safe operation on motors and starters.

On "constant-speed" compressors, the controls may be set closer, but should not function too often. The regulation should be checked to be sure it functions properly. Most designs are arranged for manual operation for inspection purposes.

Variable-speed controls are supplied on most steam- and many gas-engine-driven compressors. These usually incorporate a maximum-speed device with overspeed protection. The latter should be checked occasionally and tripped to be sure it functions as intended.

Once a day is not too often to check regulator operation. It takes only a moment.

Safety Devices Every compressor plant has certain safety devices, particularly pressure relief or pop valves. Safety ends, however, when these do not function. They should be tested daily to be sure the seats are free.

Overspeed devices are reliable if they are tested often enough to be sure they are in working order, and once a week is not too often.

Pressure gages should be calibrated at least twice a year and reset if necessary.

Never put a stop valve in a compressor discharge line without an adequate safety valve between the stop valve and the compressor.

Never clean a cylinder with inflammable solvents.

Good maintenance obviously tends toward safe operation.

Summary Inasmuch as this entire article has been a summary, it is difficult to summarize further.

The best brief seems to be as follows:

1. Follow the manufacturer's *instructions.*
2. Have *someone responsible* for continued compressor operation.
3. See that *he is informed* on the details of the units involved.
4. Supply only the *best oil* for lubrication and limit the supply.
5. *Maintain* a routine for inspections, cleaning and maintenance.

NSGA *(from page 65)*

opposed to straight-line depletion allowances even in the case of petroleum. The president was authorized to appoint a committee to study the straight-line depletion problem and to report to the executive committee with power to act.

The time and place of the mid-year board meeting were left to the decision of the executive committee.

Mr. Conrades reported that the association had acquired 35 new members in the two years in which he had served as its executive head —16 in 1942 and 19 in 1943. These new members represent 18 states, eight of them coming from California alone.

Government Needs Quartz Crystals

Pit and quarry operators are being asked to help the government find urgently needed quartz crystals. These crystals are urgently needed in large quantities for making quartz oscillater plates used in radio epuipment for the armed forces. At present the quartz used for this purpose comes from Brazil. This supply is not sufficient, however, and it is necessary to find and develop further sources in the United States.

There is no difficulty in finding low-grade quartz. Quartz is perhaps the world's commonest mineral. It is found abundantly as boulders and pebbles or as veins and grains in granite and other rocks. But the large clear quartz crystals required for radio purposes are not common at all, though they do occur in some places lining cavities in rock, and in sand and gravel.

Only separate individual crystals are wanted—not groups or clusters nor grainy masses. Each separate crystal must weigh at least one-half pound. Measured in inches, the crystals must be at least an inch thick and three inches long. Crystals with natural faces are preferred, but crystals with all the faces broken off can still be used. The above sizes are the smallest that can be used. Larger sizes, between one and four pounds, are preferred.

Each crystal must be clear and colorless on the inside. Clear means clear as glass, perfectly clear and transparent, so that a newspaper can be read through the crystal. It is not necessary that the whole crystal be perfect, but large portions of the crystal must be perfect, and these are the parts which are cut out and used. These parts must be entirely free from specks, bubbles, and lines on the inside, absolutely free from clouds, cracks and flaws of any kind whatsoever. These parts must be at least as large as walnuts. Furthermore, the bad portion of the crystal must not be more than twice the volume of the perfect portions. The reason for this is that it would not pay to do too much sawing in order to cut away the bad part of the crystal from the perfect part. Quartz crystals are often good near the pointed end but bad at the base end. In this case the bad end can usually be knocked off carefully with a hammer so that the remaining crystal is mostly good. Some crystals which appear to be perfect are useless because of optical twinning, but this is determined only with special equipment.

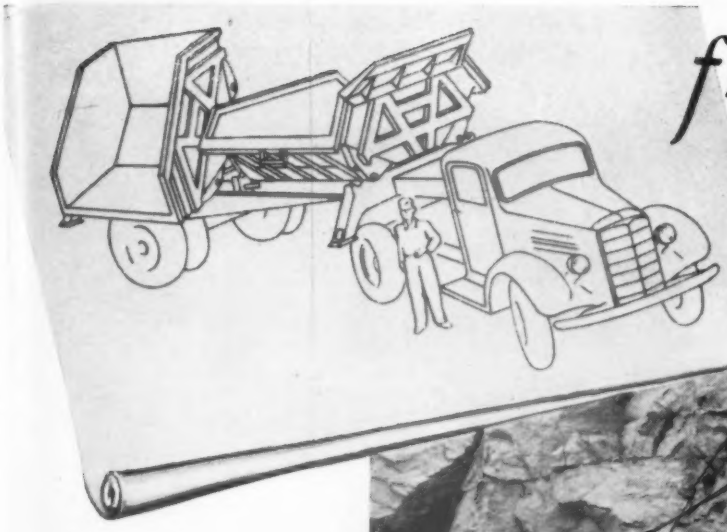
Colored quartz is not wanted. Milky quartz, purple quartz (amethyst), rose quartz cannot be used. The only exception is that light smoky quartz can be used, otherwise the quartz must be colorless.

The outside of the crystal does not matter except that it is necessary to look through the crystal in order to see flaws on the inside. Some quartz crystals are covered with iron stain but this can be removed and does no harm.

Anyone who owns or knows of a location where such material can be produced in quantity is requested to send a sample consisting of several of the best crystals he can select to the Miscellaneous Minerals Division, War Production Board, Temporary "R" Building, Washington, D. C.

POST-WAR OUTLOOK

Publication of the Post-War Outlook number of Pit and Quarry in January has resulted in the receipt of many requests for additional copies. Reprints of the 42-page section dealing with the Post-War Outlook for the pit and quarry industries have been made available and will be mailed without charge to anyone addressing a request on his letterhead to the Editorial Department of Pit and Quarry.



from **Blueprint to Quarry**

Another EASTON *Success!*

The double-bodied semi-trailers now in operation at Weston & Brooker Company serve to illustrate the versatility of EASTON engineers (who specialize in quarry haulage problems).

Luther J. Burriss, Chief Engineer at Weston & Brooker, sums up the performance record as follows: "With our modern tractors and the dual body semi-trailers we are hauling nearly twice our previous tonnage in the same time cycle with no increase in cost of fuel and oil and with the same labor that we formerly required with our back mounted units previously used."

Problem: An EASTON survey showed that a 17-ton payload would prove most economical, but such a load entering the small hopper in one discharge would have choked the crusher.

Answer: Double-bodied semi-trailers—blueprinted by EASTON several years ago. A unique solution for just such a set of conditions. Write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pa.

Luther J. Burriss

Chief Engineer
OF WESTON & BROOKER
Quarries at
Cayce, South Carolina
and Camak, Georgia.

EASTON
INDUSTRIAL CARS
TRUCK BODIES · TRAILERS
ELECTRIC LIFT TRUCKS

B-1009

TRAFFIC News Digest

Central Freight Association

Docket 74905 (1)—Cement, common, hydraulic, masonry mortar, natural or Portland, carloads, minimum weight 50,000 pounds, except when the marked capacity of car is less, in which event the marked capacity of car will be the min. wt., but not less than 40,000 pounds. Establish on, from Middle Branch, Ohio, to Donaldson, Bolair, Jerryville, Gauley River Mine No. 2, Belio, Main Fork, Jones Camp and Scotti Jct., West Virginia, 19C.

Docket 74906 (1)—Partial unloading or complete loading of freight. Amend agency and individual lines' tariffs publishing stopping in transit of freight for partial unloading or to complete loading, under executed Section 7 of the uniform bill of lading, as follows: General exceptions— Rule 15 (N), stop-off to partially unload or to complete loading will not be permitted on freight moving under executed section of the uniform bill of lading (release of consignor from liability for payment of charges) except where the consignee at stop-off point (or points) and final destination are one and the same person or firm and then only where the bill of lading is not marked "prepaid" or "to be prepaid" or the collection of freight charges is not guaranteed by bond or otherwise.

Docket 74974 (2)—Agricultural limestone, unburnt, in open top cars, carload, minimum weight 90 per cent. of marked capacity of car. Establish on, from Woodville, Ohio, to Blakesley, Edgerton, Ohio, $1.10; Bryan, Ohio, $1.05; Archbold, Ohio, $.99; Holland, Ohio, $.77; Mortimer, Ohio, $.88; Williamstown, Ohio, $.99; Lemert, Ohio, $.94; Mt. Gilead, Ohio, $1.05; Fulton, Ohio, $1.10; Johnstown, Ohio, $1.16 per net ton.

Sup. 1 to WDA 73120—Agricultural limestone, unburnt, in bulk, in open-top cars, carload, minimum weight 90 per cent. of marked capacity of car except when car is loaded to full cubical or visible capacity, actual weight will apply—WDA 73120, DB 3173, dated March 22, 1943, covering proposal to establish rates on, from Piqua and Sandusky, Ohio, to points in Ohio is hereby amended by providing for the addition of the following to Exhibit A attached hereto:

to:

To	(*)	(†)
Bloomdale, Ohio	100	94
Wayland, Ohio	171	..
Concord, Ohio	171	..

*Proposed rates from Piqua, Ohio.
†Proposed rates from Sandusky, Ohio.

Docket 75021 (2)—Lime, common, hydrated, quick or slaked, carloads. Establish commodity rates on, from Port Huron, Michigan to points in C. F. A. territory, as shown in Exhibit A which follows, subject to Ex Parte 148 increase (suspended).

EXHIBIT A

(List of points to which rates are proposed showing distances and scale rates prescribed in ICC Docket 16170 inclusive of Ex Parte 123 increase. Rates in cents per 100 pounds.)

From Port Huron, Michigan

*	†	†	*	†	†
Ada	15	12	Montpelier	14	12
Ashland	16	13	Navarre	17	14
Athens	19	15	Nelsonville	18	14
Baltimore	18	14	N. Baltimore	14	12
Bellevue	15	12	Orrville	17	13
Berea	16	13	Piqua	17	13
Bowling Green	14	11	Pomeroy	19	15
Carey	15	12	Shelby	15	12
Chillicothe	18	14	Upper Sandusky	15	12
Circleville	18	14	Wapakoneta	16	13
Dayton	17	14	Washington C. H.	18	14
Findlay	14	12	Wauseon	14	12
Fostoria	14	12	Wellington	16	13
Geneva	18	14	Wellston	19	15
Hamilton	18	14	Wickliffe	17	13
Hillsboro	19	15	Willard	15	12
Lima	15	12	Willoughby	17	13
Logan	18	14	Wooster	17	13
Lorain	16	13	Xenia	18	14
Mansfield	15	12			
Middleport	19	15			

*To representative Ohio points.
†Proposed rates—Min. wt. 30,000 pounds.
‡Proposed rates—Min. wt. 50,000 pounds.

§	†	†	§	†	†
Auburn	15	12	Michigan City	18	14
Elkhart	17	13	Plymouth	17	14
Kingsbury	18	14	Warsaw	17	13
LaPorte	18	14			

§To representative Indiana points.
†Min. wt. 30,000 pounds.
‡Min. wt. 50,000 pounds.

‖	†	†	‖	†	†
Adrian	13	11	Lapeer	11	9
Albion	14	12	Marine City	11	8½
Allegan	16	13	Owosso	13	10
Big Rapids	15	12	Pontiac	12	9½
Cadillac	15	12	Provemont	18	14
Corunna	13	10	Rochester	11	9
Dundee	13	11	Sandusky	11	9
Frankfort	17	14	South Haven	16	13
Gaylord	16	13	Sturgis	15	12
Greenville	14	12	Traverse City	17	13
Hastings	14	12	Vicksburg	15	12
Imlay City	11	8½			
Ionia	14	11			

‖To representatve Michigan points.
†Proposed rates—Min. wt. 30,000 pounds.
‡Proposed rates—Min. wt. 50,000 pounds.

Docket 75028 (2)—Stone, lake or river filling, in open-top cars, not container cars, carloads, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to cubical or visible capacity, actual weight will apply. Establish on, from East Liverpool, Ohio, to Cleveland, Ohio, $1.46; Erie, Pennsylvania, $1.60 per net ton, subject to Ex Parte 148 increase (suspended).

Docket 75031 (1)—Stone, rubble, in open-top cars only, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply; stone, crushed in bulk, in open-top cars only, minimum weight 90 per cent. of marked weight capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Cancel rate of $.69 per net ton, from Jeffersonville, Indiana, to Louisville, Kentucky, New Albany and Watson, Indiana; from Louisville, Kentucky, to Jeffersonville, Indiana, New Albany and Watson, Indiana; from New Albany, Indiana, to Jeffersonville, Indiana, Louisville, Kentucky, and Watson, Indiana; from Watson, Indiana, to Jeffersonville, Indiana, Louisville, Kentucky, and New Albany, Indiana, published in CFA L Trf. 348-J, account obsolete, Classn. basis to apply.

Docket 75033—Sand, carloads, minimum weight as shown in Item 20 of WTL Trf. 41. Establish on, from Ottawa-Utica, Ill., dist. to Rockport, Indiana, Col. A. $2.75; Col. B. $3.03; Col. C. $2.75 per net ton. Route: Via routes shown to the Chicago and Kankakee gateways in Item 85, WTL 41, thence: C. I. & L., French Lick, Indiana, Sou. Ry.; C. I. & L., New Albany, Indiana, Sou. Ry.; C. I. & L., Louisville, Kentucky, Sou. Ry.; N. Y. C. (W), Danville, Illinois, N. Y. C. (C), Mt. Carmel, Illinois, Sou. Ry.

Southern Freight Association

Docket 30826 (shipper; suggested by carrier)—Establish on ilmenite ore or rutile ore or concentrates, from Jacksonville and South Jacksonville, Florida, following rates net ton: To Niagara Falls, Suspension Bridge, New York, $6.80; Sayreville, Phoenix, New Jersey, $5.88; and St. Louis, Missouri, $5.81.

Docket 30827 (shippers: suggested by carriers)—Change description applicable on silica as described in Items 16180 and 23710, C. F. A. Trf. 604, Items 15020 and 23320, I. F. A. Trf. 90, and Items 2550 and 2565, T. L. A. Trf. 82-D, to read:

Silica (silex); tripoli; sand; silica: ground, powdered or pulverized in packages or in bulk, carloads, minimum 40,000 pounds. Class 16 rates to be applied same as now applicable in connection with present description.

Docket 30832 (carrier)—Bauxite ore, carloads. Cancel as obsolete, rate of $5.50 gross ton published in Items 32575, 32670 and 32692-A of S. F. T. B. Trf. 10-T from Chickamauga, Tennessee to Chester, Marcus Hook, Pennsylvania, and North Claymont, Delaware, 12th Class rate of $.36 cwt. to apply.

Docket 30835 (shipper; suggested by carrier)—Publish rates on lime, common, hydrated, or slack, from Ragland to Wetumpka Alabama, as

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A blast of compressed air usually carries lubricating oil from compressor to pneumatic tool. So, in addition to construction for handling high pressures, Republic Pneumatic Hose is built with an oil-resistant inner tube. Working conditions require a non-crushable carcass and a tough cover to withstand abrasion from rocks, concrete or other materials. The designs of steam hose, fire hose and oil drilling rotary hose are as exacting in construction needs. Through years of research, engineering and manufacture, Republic Rubber has developed hose designed for specific uses. Your Republic Distributor is qualified to advise you on the type and quality to render the service you need. Ask him about Republic Rubber Hose.

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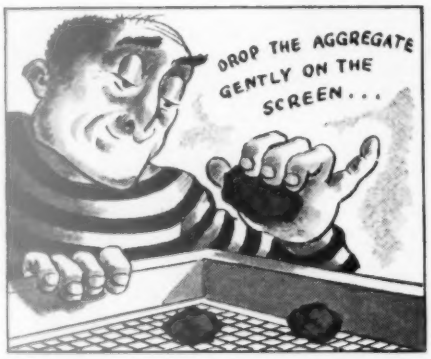
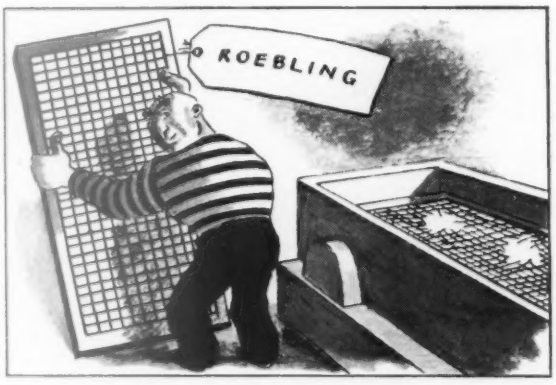
3 ways to cure grading screen headaches!



1 DROP THE AGGREGATE gently on the screen. Easy on the screen but hard on your pocketbook. Easier on your pocketbook is to work vibrating screens top-speed with a tough, long lasting screen like Roebling.

2 GRADE BY MEASURING with calipers for accuracy. But efficient equipment *plus* the uniform mesh of a Roebling screen is just as accurate—accuracy that is maintained for the life of the screen.



3 THE BEST IDEA is to specify Roebling, whatever your requirements. Custom steelmaking and fabricating methods assure screens that stand up under severest vibration and abrasion—maximum tonnage per screen dollar.

ORDINARY STEEL won't do—for screens that must stand up under today's operating conditions. That's why Roebling makes every pound of steel that goes into Roebling Screening—makes it in closely-controlled furnaces—to the exact analyses that mean utmost resistance to wear and vibration.

Then, we draw and temper the wire to Roebling standards, established by a century of wire making experience. And finally, it is fabricated on the right type of equipment that means uniform mesh, maximum production.

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follows: Carload minimum 30,000 pounds, $2.86; carload minimum 50,000 pounds, $2.29 net ton.

Docket 30859 (shipper; suggested by carrier) — Stone, crushed, carloads. Establish $2.20 net ton, Kendrick, Flordia, to Mobile, Alabama.

Docket 30872 (shipper; suggested by carrier)—Establish rate $4.95 net ton on ground limestone, carload minimum weight 88,000 pounds as to $2.77 of rate and 90 per cent. of marked capacity of car except when car is loaded to full cubical or visible capacity, actual weight applies as to remainder from Cartersville, Georgia, to Chicago, Illinois, to alternate with present joint through rates of $5.27 and $5.10 net ton.

Southwestern Freight Bureau

Docket 32436 (2)—Granite or stone, Cold Springs, Rockville, St. Cloud and Sauk Rapids, Minnesota, to Blackwell, Oklahoma. To establish rate of $.50½ per 100 pounds (subject to Tariff X-148, suspended), on granite or stone, chiseled, dressed, polished, hammered or sand-rubbed, not carved, lettered or traced, finished pieces in boxes or crates with apertures not exceeding 4 inches in width and projections protected by cleats and boxing over same, minimum weight 50,000 pounds, from Cold Spring, Rockville, St. Cloud and Sauk, Minnesota, to Blackwell, Oklahoma.

Docket 32471 (1)—Super-phosphate, Little Rock, Arkansas, t o Idaho and Oregon. To establish the following rates per ton of 2,000 pounds on superphosphate, (acid phosphate), in packages or in bulk; super-phosphate, ammoniate (acidulated and ammoniated phosphate rock), in packages or in bulk, minimum weight marked capacity of car used, from Little Rock, Arkansas, to stations shown below on the Union Pacific. Rates to be subject to Tariff X-148 (suspended) and subject to an expiration date of six months from effective date of rates:

From Little Rock, Arkansas

To Anderson to Humphrey, Idaho (6260-7320, incl., $11.50 per ton; to Pegram to American Falls, Idaho (7695-7905), incl., $11.50 per ton; to Borah to Indavad, Idaho (7906-8290), incl., $12.50 per ton; to Curry, Idaho to Vale, Oregon (8365-9235), incl. $12.50 per ton; to Ontario, Oregon to Weiser, Idaho (9385-9453), incl., $12.50 per ton.

Trunk Line Association

Sup. 2 to 41892 (shippers)—Roasted dolomite (refractory dolomite, in granular form, treated or untreated, clinkered or burned to a

dead state), carload, minimum weight 90 per cent. of marked capacity of car, etc., from Bluebell, Pennsylvania, to Portsmouth, Virginia, $2.40 per net ton.

Docket 41962 (shippers)—Limestone, viz.: Crude, fluxing, foundry or furnace, when loaded in bulk in open-top equipment, minimum weight 90 per cent. of marked capacity of car, etc., from Thomasville, Pennsylvania, to Chambersburg, Pennsylvania, $1.30 per gross ton, in lieu of present 6th class rate of 16 cents per 100 pounds. Reason: Comparable with rates to other points in immediate vicinity.

Western Trunk Line Association

Docket E-41-594—Proposed: To establish rate on limestone, crushed or ground of $3.35 per net ton from Valmeyer, Ill., and $3.40 per net ton from Prairie du Rocher, Illinois, to various Iowa destinations. (Copy of exhibit will be furnished on request.) (By shipper).

Docket E-41-591 (reiss.)—Limestone, crushed or ground, carload. Proposed: From Valmeyer, Illinois, to Omaha, South Omaha, Nebraska, and Council Bluffs, Iowa, $3.20 per net ton. To Sioux City, Iowa cancel $3.74 per ton rate published in Item No. 2630, W. T. L. Tariff No. 1-Z, and continue a rate of $.19 per 100 pounds or $3.80 per ton, published in Item No. 610, Mo. Pac. Tariff 7908-I. From Prairie du Rocher establish a rate of 5 cents per ton higher than proposed from Valmeyer, Illinois. (By shipper).

Docket D-12151—Lime, from Cordova, Illinois, to Muncie and Charleston, Indiana. Rate: Present —15 cents per 100 pounds, Items 150 and 160, C. F. A. Tariff 516-J. Agent Jones' I. C. C. 3832. Proposed—Cancel, allowing Class or Combination rates to apply.

Docket E-41-596 — Limestone, crushed or ground, carloads minimum weight 90 per cent. of marked capacity of car except that when actual weight of shipment loaded to full visible capacity of car is less than 90 per cent. of marked capacity of car, the actual weight shall be the minimum weight; but in no case shall the minimum weight be less than 40,000 pounds in open-top cars; or 54,000 pounds in cars other than open-top or tank cars, from Prairie du Rocher, Illinois, to representative destinations in Iowa; Cedar Rapids, Des Moines and Oskaloosa, Iowa 16¼ cents; Ottumwa, Iowa, 13 cents; Rock Rapids, Iowa, 22 cents; Shenandoah, Iowa, 15 cents, being proposed rates. (Copy of exhibit will be furnished on request.)

There's No True Substitute for Manganese Steel in Crushing Service

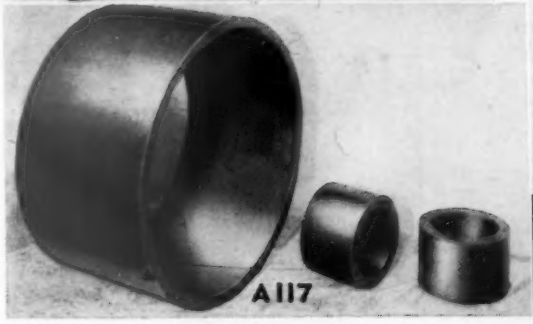
Manganese steel, first made 60 years ago, was employed soon after its inception for crusher elements such as roll shells, mantles, and jaws. During all this period quarry operators have found no other steel that will give the long, economical performance made possible by the ductility and wear-hardness of "the toughest steel known."

Today almost every maker of crushers incorporates manganese steel wearing parts into his new machines, whether jaw, gyratory, cone, roll or hammer type; and most of them use Amsco manganese steel. They also are able to fill promptly users' orders for identical repair parts.

If and when a more economical metal is developed for crushing service, Amsco will be making it. In the meantime all experience proves the superiority in performance and ultimate economy of austenitic manganese steel.

Your order sent to the crusher manufacturer, specifying Amsco manganese steel, is the best way to quickest service and guaranteed fit. Bulletin 642-C describes all applications in crushing service.

C-570—Crusher jaws like these are made in all sizes of Amsco manganese steel.
A-117—Besides first-class abrasion resistance, "the toughest steel known" offers unequalled ability to resist breakage from shock stresses.
R-444—A three-part gyratory crusher mantle, weight 13,000 lbs.



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Chicago Heights, Illinois
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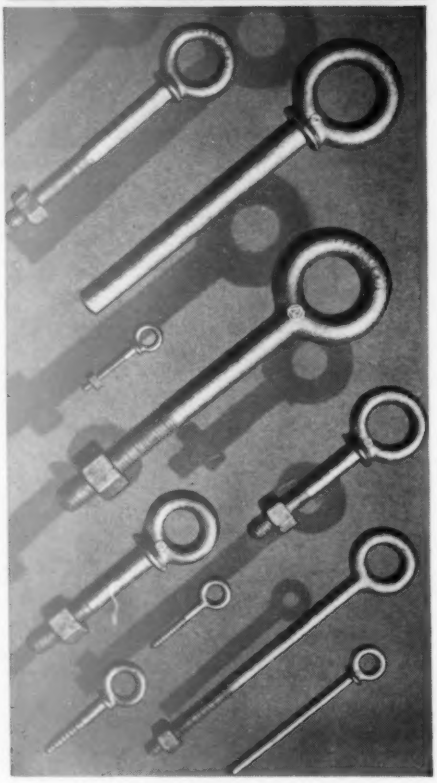

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Fourth Section Orders

Docket 15046—Limestone—Oriskany Falls, New York to Cambridge and Eagle Bridge, New York—Appl. 20558—Filed by N. Y. O. & W. for itself and on behalf of D. & H—The applicants herein authorized to establish and maintain over the route of the New York Ontario and Western Ry. Co. (Frederic E. Lyford trustee) to Sydney, New York thence The Delaware & Hudson RR. Corp. for the transportation of limestone ground or pulverized in carloads from Oriskany Falls, New York to Cambridge and Eagle Bridge, New York a rate not lower than $1.82 per ton of 2,000 pounds and to maintain higher rates from and to intermediate points provided that the rates from and to such higher rated intermediate producing or consuming points shall not exceed rates constructed on the basis of the scale and in the manner prescribed or approved in American Lime & Stone Company *vs.* Pennsylvania R. Co. 201 ICC 467 which report is hereby referred to and made a part hereof increased as authorized in subsequent general increased rate proceedings provided further that rates from and to other higher rated intermediate points shall not be increased except as may be authorized by the Commission and provided further that rates from and to any higher rated intermediate points shall not exceed the lowest combination of rates subject to the Interstate Commerce Act. (Order Jan. 1).

The field sales staff of Athey Truss Wheel Company assembled for its annual meeting at the Bismarck Hotel in Chicago on December 6, 7 and 8. Ben F. Lease, domestic sales manager, was in charge.

The Kropp Forge Company, Chicago, announces that Charles L. Foley has been appointed engineering sales representative for New York and adjacent territories.

PERSONAL MENTION

J. C. ANDREWS, for several months acting superintendent of the Nebraska Cement Company, Superior, Nebraska, has been made superintendent.

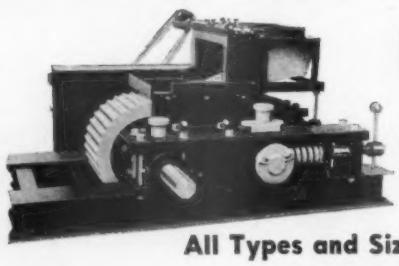
CHARLES BARTEL, an employee of the Altoona Concrete Products Company, Altoona, Pennsylvania, died recently after injuries sustained when his right foot and leg became caught in a concrete mixer at the plant.

ARTHUR R. ALVIS has established a limestone-crushing plant at West Plains, Missouri, and has the equipment in operation. He has a plant that will turn out between 400 and 600 tons of crushed product daily.

EDWARD J. BURNELL, heretofore vice-president and general manager in charge of Pershing Road plant operations and central division sales of the Link Belt Company, in Chicago, has been transferred to the executive office of the company, 307 North Michigan Avenue, Chicago. In his new position Mr. Burnell will be vice-president in charge of sales for the entire Link-Belt Company.

O. O. LEWIS, formerly branch manager Fairbanks, Morse & Company, Atlanta, has been promoted to assistant general sales manager of the company at Chicago.

STANTON WALKER, director of engineering of the National Sand & Gravel Association, was elected chairman of the Highway Research Board at the annual meeting in Chicago recently. He succeeds F. C. LANG, engineer of materials and research, Minnesota Department of Highways.



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All Types and Sizes to Suit the Job

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CHARLES C. KING, who has been assistant superintendent for the Texas Mica & Feldspar Company, Van Horn, Texas, has resigned to take a position with the National Lead Company, New York.

JOHN W. KENNEDY has been advanced to general sales manager of the Huron Portland Cement Company. Other appointments include: DEWEY T. MEYERS, assistant sales manager, and THOMAS W. MURRAY, division sales manager, Detroit.

JOSEPH POUKOVITCH, an employee of the Hudson, New York plant of the Universal Atlas Cement Company, has been awarded a silver service medal in recognition of 25 years of service with the company. He is employed as a carpenter.

HOWARD L. STILLEY, veteran employee of R. G. LeTourneau, Inc., Peoria, has been promoted to chief field engineer. He succeeds Ken F. Park, who resigned to join the Caterpillar Tractor Company.

V. C. MEKEEL, superintendent of foundries of Ampco Metal, Inc., of Milwaukee, has resigned to accept the management of product engineering and sales development for the Syncro Machine Company, Rahway, New Jersey.

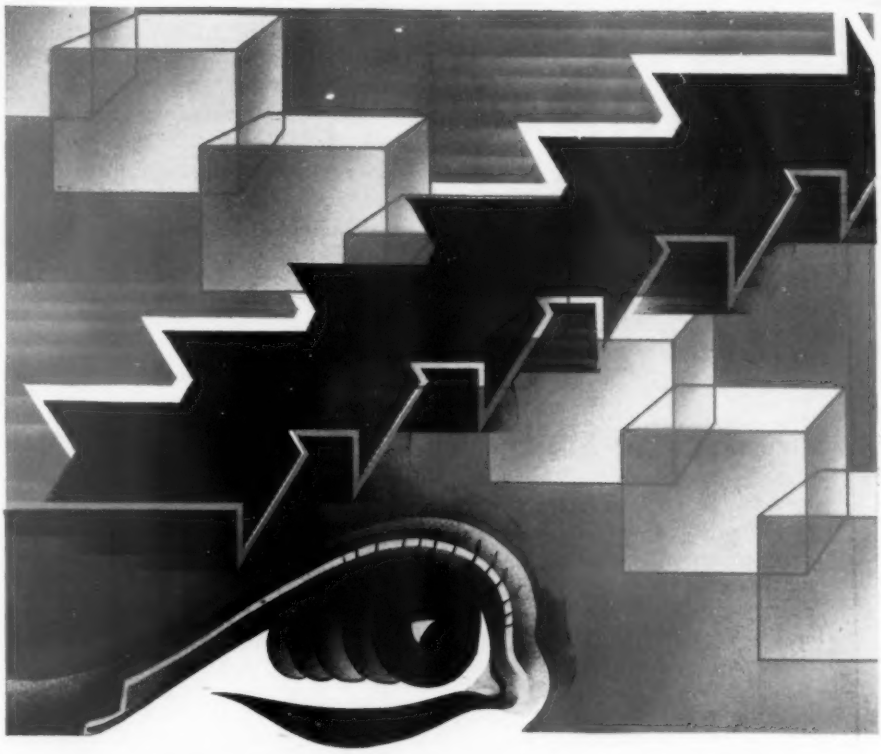
W. O. LAWRENCE, JR., plant engineer of the Leeds, Alabama, plant of the Universal Atlas Cement Company, has been appointed assistant plant manager.

NOBLE H. PETERSON, chief engineer of the Superior Portland Cement Company, has been commissioned a lieutenant and has reported for duty with the U. S. Navy Seabees at Williamsburg, Virginia.

DR. PAUL D. V. MANNING, director of research since 1941 for the International Minerals & Chemical Corporation, Chicago, has been elected a vice-president of the company.

HARRY S. DAVISON, J. K. Davison & Brother, and JOSEPH A. JONES, West Penn Cement Company, have been named 1944 directors of the Pittsburgh Builders' Exchange.

WALTER G. PENRY, head of the Ohio Elks' Association and owner and operator of the Penry Stone Company, has announced his candidacy for the Republican nomination for representative from Delaware County.



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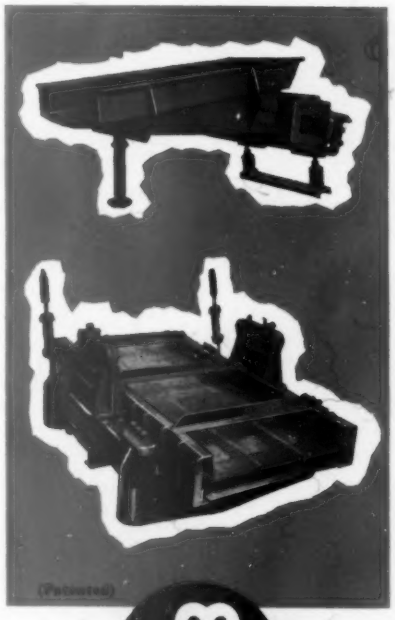
Nothing Moves but the Material



Watch a Jeffrey-Traylor Vibrator work . . . you see a smooth-flowing stream of material moving steadily forward, uphill or down, while the deck of the machine remains visually motionless.

The advantages of the electric vibrating principle for batching, conveying, cooling, drying, feeding, proportioning, screening, sizing, packing or weighing are as diversified as the industries which they serve. The applications are almost limitless.

Ores, sinters, foodstuffs, powders, chemicals . . . can be handled efficiently and economically through various processing operations.

Perhaps there's a vibrating unit already built for your needs—if not, Jeffrey can design the equipment which will best serve your plant.

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Dependable equipment for *accurately* weighing and/or blending gravel, cement, crushed rock, limestone or sand, *in transit*, on conveyor belts. Write to Builders-Providence, Inc. (Division of Builders Iron Foundry), 9 Codding St., Providence, 1, R. I. for Bulletin 322.

Sincerely Yours,
BUILDERS-PROVIDENCE

OBITUARY

EDWARD E. STALEY, 72, chairman of the board of directors of the Baker Manufacturing Company, died December 23, at his home in Springfield, Illinois, after an illness of several years.

RICHARD JENNINGS, field engineer with Oliver United Filters, Inc., died January 23 at Lawrence, Massachusetts. Mr. Jennings, who joined the organization in 1927, had just completed some test work on filters in a paper mill when stricken with a cerebral hemorrhage.

EUGENE T. DAVIS, 51, who had engaged in the manufacture of cement and plaster products, died at Tampa, Florida, recently. He was a native of Pinckneyville, Illinois.

LEWIS MERIWETHER WALKER, 61, president of the Friend Sand & Gravel Company, Petersburg, Virginia, died in Richmond, Virginia January 17. He had resided in Petersburg for 24 years. He is survived by his wife, two sons and a daughter.

The late A. J. Rooney, vice-president, Huron Portland Cement Company, whose death on December 11 was noted in the January issue.

Thomas F. Burke, 56, former New York district manager of the Lehigh Portland Cement Company, died at Englewood, New Jersey, recently after a long illness.

ROBERT WITHERS MASSIE, retired president of the Lone Jack Limestone Company, of Lynchburg, Virginia, which he founded, died January 1 after a short illness. He had resided in Lynchburg for 47 years. He is survived by his widow, two sons and a daughter.

W. P. MCGEORGE, 63, head of the Pine Bluff Sand & Gravel Company, Pine Bluff, Arkansas, died December 23. He organized the company in 1913.

IT'S ALWAYS IN THE NEWS

You can't keep a consistent record-breaker like AMERICAN Crushers out of the headlines.

"AMERICANS" hold and *improve* the high marks for continuous operation under the severest working conditions, tonnage output, and all 'round economy.

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Legal Decisions

Taxation on Imports

Article I, Section 10, of the Constitution of the United States provides that "No state shall, without consent of the Congress, lay any imposts or duties on imports or exports. . .

However, this law is not applicable to merchandise shipped from countries controlled by the United States.

For instance, in *Dant & Russell, Inc. v. Board,* 133 Pac. (2d) 817, California, it was shown that at various times during the past several years merchandise was shipped from the Philippine Islands to Long Beach, California, where it was stored in a warehouse. None of it was sold in California and no orders were received or solicited for sales outside the state. However, some of the

goods were sold from time to time on orders received at the purchaser's office in Portland, Oregon, and were delivered to carriers for shipment to their destination outside California.

The county of Los Angeles levied *ad valorem* property taxes on the merchandise remaining in the yard at Long Beach on the first Monday in March.

The seller appealed to the higher court on the ground that the merchandise was not taxable by the state because it was imported. However, the higher court refused to agree with this contention.

Right to Use Road

Generally, the courts will refer exclusively to the formulation and wording of a written contract to determine the rights and liabilities of the contracting parties. And certainly the court will not imply an obligation not clearly expressed in the written contract, and not proved by verbal testimony.

For example, in *Servtex Materials Company v. Kelly,* 171 S.W. (2d) 181, it was shown that the owner of a rock quarry entered into a written contract whereby a contractor was granted the exclusive right to sell the "accumulated rock material". Later the owner of the quarry entered into another contract by the terms of which he granted a right to a county to erect rock crusher and come on the premises and get rock from the quarry.

The contractor filed suit and asked the court to grant an injunction against the county trucks using the road, over the premises, to haul rock. He contended that his contract gave him an exclusive right to use the road and that the county trucks had no right to use this road.

However, the higher court held that both the contractor and the county could legally use the road since in the original contract between the contractor and the land owner no clause had given the contractor the exclusive right to use this road.

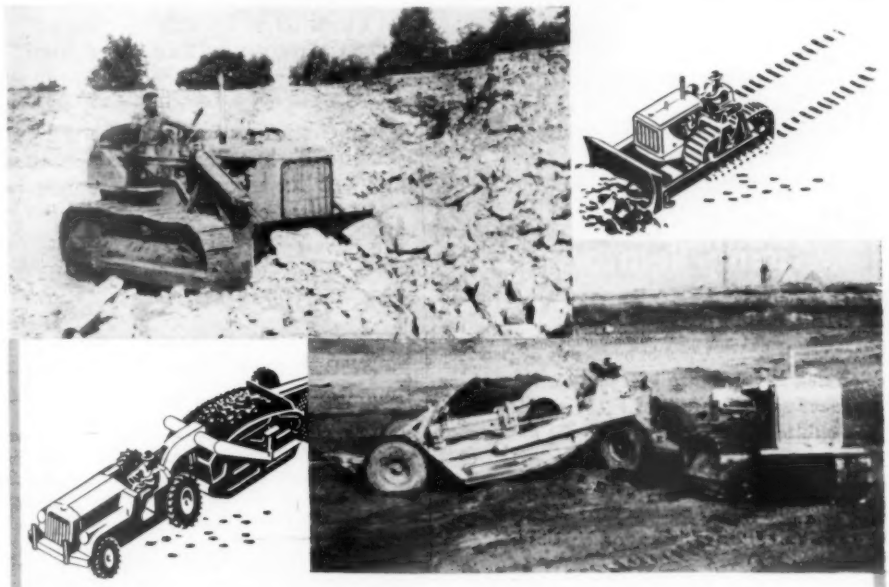
When Contract Is Void

Under certain circumstances a contract of sale for unknown or uncertain merchandise may be void. For example, a contract for the future delivery of products is void for want of consideration and mutuality, if the *quantity* to be delivered is conditioned by the will, wish, or want of one of the parties.

On the other hand, modern higher courts hold that although the exact quantity of purchased merchandise is not specified in a contract of sale, yet the contract may be valid if the seller accepts an offer to furnish or deliver to a purchaser such merchandise *as shall be needed, required, or consumed* by the purchaser during a specified period of time. A contract of this nature is valid, although the quantity of the purchased goods is not certain and definite because it is a valid implied agreement of the purchaser to purchase *all* the merchandise that *shall be required* in conducting his business during this time. See *Laclede Construction Company v. T. J. Moss Company,* 185 Mo. 25; and *Laclede Company v. Tudor Iron Works,* 169 Mo. 137.

For example, in *Great Eastern Company v. DeMert & Dougherty, Inc.,* 166 S.W. (2d) 490, it was shown that a salesman inquired of a prospective purchaser regarding his next year's supply of materials. When they agreed on a price, a printed form was filled out by the salesman in duplicate and presented to the purchaser who signed it. It was also signed by the salesman but it stated "This contract is not binding upon the seller until signed by an executive officer." An official of the selling corporation approved the order by writing an acknowledging letter.

When the seller refused to deliver



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5. Pushing rocks into banks for loading.
6. General digging, hauling, dumping and spreading.

Especially today, when every man and every man-hour counts heavily, LaPlant-Choate dozers and scrapers can help increase production, reduce costs. Around plants, mines and in quarries all over the world, these sturdy efficient machines are handling a wide variety of jobs *quicker, cheaper, better.* For helpful job application data . . . for efficient parts and repair service . . . see your nearest LaPlant-Choate-"Caterpillar" distributor, or write: LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa.

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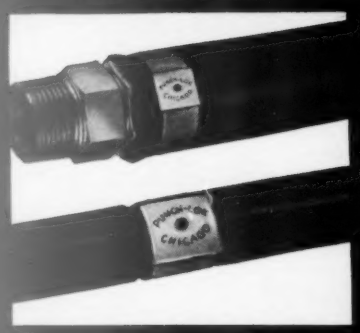


SPEED-SAFETY-ECONOMY
In Clamping-Splicing-Repairing-Mending-Tieing-Reinforcing

PUNCH-LOK Streamlined Hose Banding Method is being used in hundreds of production and maintenance jobs in all industries for connecting high-pressure hose; splicing electric cable; stopping leaks in steam and water lines; reinforcing and mending splits in cross-arms and ladder rails; tieing rigid conduit or flexible cable to existing pipe lines or girders; tieing ends of wire or manila rope to prevent fraying—and many other jobs. PUNCH-LOK is giving wartime industries a fast, safe, economical, quality banding method. Investigate NOW the many advantages it will have for you in your present and postwar work. Let PUNCH-LOK solve your clamping or banding problems!

CLAMPS . . . Made of flat, high tensile, galvanized steel, double wrapped. Available from ⅜" to 48" I.D. Any large size clamp can be pulled down and made into a smaller size.

LOKING TOOL . . . Sturdily constructed to assure long life. Locks all size clamps with a tensional pull of 1,000 lbs. Hammer punches and breaks excess band flush at clip.

GROOVED FITTINGS . . . For water or steam lines. Permits application of high pressure clamping without damage to hose.

Write for Descriptive Catalog and Name of Local Distributor

PUNCH-LOK COMPANY
Dept. J, 321 N. Justine St.
Chicago 7, Illinois

the merchandise the purchaser filed suit to recover damages. The seller contended that the contract lacked mutuality and was void for want of consideration, because the exact quantity of merchandise was not specified in the contract. Notwithstanding this argument the higher court held the seller liable to the purchaser for $9,201 damages, and said:

"We think it is a reasonable construction of this transaction to say that the printed form and the letter together did make a definite contract. . . . And also the proper measure of damages in such cases, is namely: the difference between the contract price and the market price at the time of breach of contract, or date delivery was due if specified."

Therefore, although the purchaser was not definitely obligated to purchase a stated quantity of materials, yet the higher court based its damage verdict upon the difference between the contract price and the market price of the quantity of merchandise the purchaser *was privileged* to buy.

Questions and Answers

[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—ED.]

Legal Editor: According to the laws in our state every company which employs three or more employees must contribute to the Workmen's Compensation. We employ but two men regularly, but on other occasions we employ ten or more men. Recently one of our men was killed. What is our status, as we do not carry the Workmen's Compensation?—H. Co.

Answer: According to your statement, you were legally obligated to carry the state insurance. These laws specify that where you employ three or more men, (or other number specified in the particular state, as the various laws differ in this respect), you are obligated to carry the insurance. This does not mean that you shall employ three men regularly, but if occasionally you employ three or more employees you are obligated to contribute to the insurance fund.

Also, you must post the notice received from the State Industrial Commission in your office, or other place, where the employees have an opportunity to read it. If you fail to contribute to the fund, or neglect to post the notice, then the injured or killed employee or his dependents may sue you to recover damages instead of accepting the state-compensation payments.

Therefore, in this instance, since you did not contribute to the fund, you are liable for suit and payment of damages to the dependents of the employee who was killed. However, this statement does not, under all circumstances, mean that you must pay damages, as an employer is not liable in damages for injury to an employee unless the testimony indicates that the injury resulted from lack of ordinary care on the part of the employer. If the injury resulted from carelessness of the injured employee or through no fault of the employer, the latter is not liable in damages for the injury. This is the general law on this subject.

See the late case of *Seay*, 8 S.E. (2d) 796, in which a state law provides that an employer who employs "regularly" ten men or more must contribute to the state fund. This employer employed six men all the time, but occasionally he employed twelve or fifteen men. The court held that this employer was within the provisions of the law and that he should have carried the insurance because the word "regularly" meant:

PERFORATED METAL SCREENS
FOR SAND, GRAVEL STONE, ETC.

Manufactured exactly to your specifications.

Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.
Prompt Shipment

CHICAGO PERFORATING CO.
2435 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1459

"The necessary number of employees to carry on the operations of the business." This court said:

"If the employment of the minimum number of employes continues through a reasonable period . . . . the [industrial] act applies although at times less than the minimum are employed."

It is true that many persons pay insurance premiums for many years never realizing that actually they are not protected against loss. Therefore, it is important to know that an insurance policy is a legal contract by the terms of which the insurance company or state agrees to perform certain definite services of protection and the insured also agrees to comply with the clauses written in the policy. If the insured fails to conform with his assumed obligations the insurance company or state is relieved from liability. This law is applicable to all contracts, because if one party to a contract breaches his obligations the other contracting party is automatically relieved from further liability or obligations.

For example, in a recent case the law requires that every employer, who contributes to State Workmen's Compensation insurance, shall conform with the state laws intended to provide safe working places. An employer failed to install a certain safety device. An employee was killed. Since the state compensation payments were relatively small the employee's dependents sued the employer for damages. The higher court promptly held the employer liable for the payment of $15,000 damages. The important point is: If the employee had been killed where the safety device *had been installed*. the employer would not have been liable in damages. The employee's dependents would have been compelled to accept the compensation payments specified by the state workmen's compensation laws.

NEW MACHINERY and SUPPLIES

• Hose Clamps

Hose clamps for any size hose, emergency pipe repair, etc., are easily and quickly made with Band-It, a new type of banding material being marketed by Band-It Company, Denver, Colorado.

Clamps of any diameter are formed from a continuous roll of steel band and a special tool and buckles. Conveniently portable for field use, it has numerous uses about the plant, pit or quarry. The banding material is supplied in four sizes, from ⅜ to ¾ inches in width. Unlike wire, the flat bands can not cut a hose, no matter how tightly it is applied.

• Hydraulic Classifier

Developed to fully utilize the principles of hindered settling classification, the Dorrco Hydrosizer, a product of the Dorr Company, New York, provides fully automatic control of a sensitivity claimed to have never before been approached in a hydraulic classifier. It is a completely automatic unit, continuous in operation, and capable of producing a number of sharply classified products from a feed composed of 4 mesh and finer particles. Separation is effected due to differences in the specific gravity or particle size of the material to be treated, or a combination of both.

The Hydrosizer consists of a tank subdivided into five or more trapezoidal pockets, the areas of which increase from the feed to the overflow end. These pockets are separated from each other by a baffle plate, and are equipped at the bottom with a perforated constriction plate with holes having a diameter and spacing corresponding approximately to the size particles to be retained in each pocket. Hydraulic water is introduced under the constriction plates from a water header through an adjustable pinch valve and then into the hydraulic water compartment under each pocket.

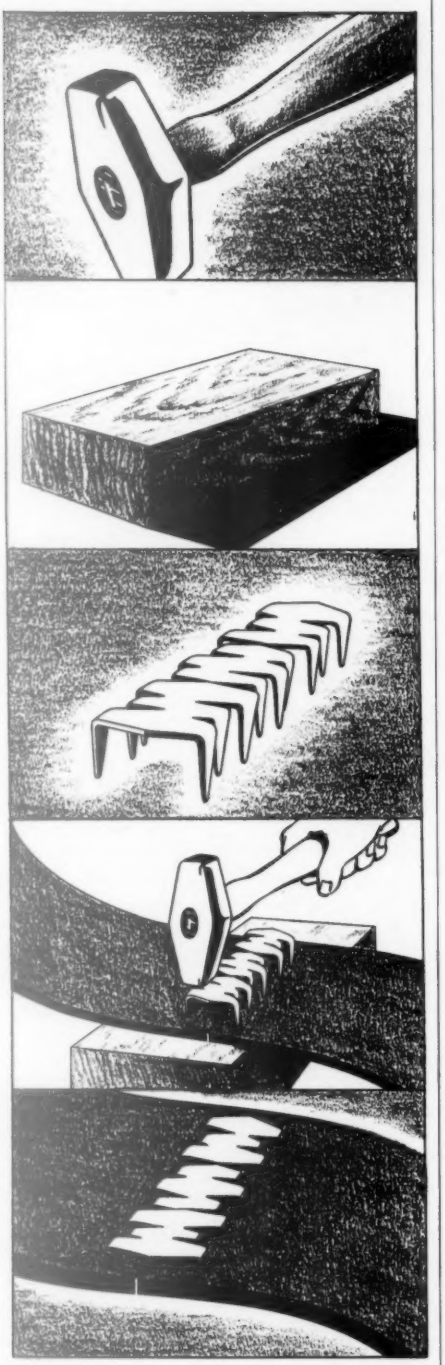
8 WAYS BETTER

Opposed elliptical throw for accurate grading and high capacity . . . adjustable throw for every screening condition . . . powerful, positive high speed for prevention of blinding . . . oil (not grease) lubrication for operation at higher speeds with less heat . . . automatic screen cloth tension for longer screen life . . . fully cushioned vibration for protection of supporting structures . . . two-bearing construction for dependable, trouble-free performance . . . lowest power requirements for maximum operating economy.

Here, boiled down, are eight outstanding features of Plat-O Vibrating Screens. But it is not merely because they are "*outstanding*" that we mention them. It is because they are the eight *proven* ways in which Plat-O assures the operator better, more dependable and more economical grading.

For all the facts on Plat-O Vibrating Screens, write today for your copy of "Better Sizing--Cheaper."

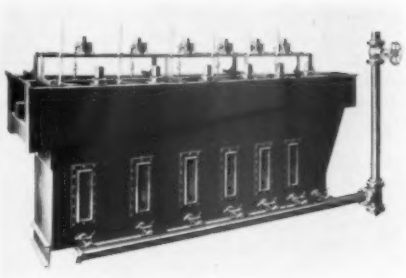
DEISTER MACHINE COMPANY
Fort Wayne 4, Indiana



BRISTOL'S BELT FASTENERS

For leather, rubber or woven belts and conveyors — up to 13/16". Write for Bulletin 728A.

THE BRISTOL COMPANY
137 Bristol Road, Waterbury 91, Conn.
DISTRIBUTORS EVERYWHERE



Automatic hydraulic classifier.

In the center of the constriction plate a discharge valve is located, consisting of a valve seat, discharge pipe, and plug valve which is held at the end of a valve rod and cable. This cable is attached to a modulating, reversible motor which activates the plug valve. Electrically connected to the valve motor is the valve-motor control—an extremely sensitive pressure registering instrument which constantly measures the hydrostatic head in the standpipe located in each pocket. Changes in head are immediately transmitted to the valve motor which automatically raises or lowers the valve plug to compensate for them. The top portion of the standpipe extends above the machine and consists of a graduated lucite tube which enables the operator to check the hydrostatic pressure in each pocket. Glass windows are provided so that the teeter conditions in each pocket can be observed, and handholes permit easy cleaning of each pocket.

Feed is introduced at the narrow end of the machine into a feed compartment, where preliminary sorting occurs. When the unit is adjusted, the discharge mechanisms in each compartment reach a balance determined by the hydrostatic pressure at which the Valve Motor Control has been set. Thus, when no major change in feed characteristic occurs, each spigot product is uniform and discharged continuously. No manual adjustments are necessary except where abnormal changes in the feed occur.

To date, the Dorrco Hydrosizer has been successfully applied to the preparation of table feed and specification sand and in the concentration of phosphate rock, iron ore and chromite.

• Belt-Patch Material

Industrial So-Lo, a product of So-Lo Works, Inc., Loveland, Ohio, for repairing breaks, burnt or worn spots, filling holes and for resurfacing industrial belts of all types—rubber, rubber composition, leather, and cotton, is now being made with synthetic rubber. The manufacturer claims it will greatly lengthen the life of belts and allow continued use of some conveyor belts that might otherwise be discarded. It is easily applied, dries tough overnight, and is very economical. One quart covers approximately 14 square feet.

Many superior advantages are claimed for Industrial So-Lo in its new form. It is said to have greater resistance to oil and grease, less shrinkage, spreads easily, and dries more smoothly. The product consists of a cement primer and a mastic. The belt surface is roughened and the primer applied. The mastic is then spread on.

Industrial So-Lo is also used for resurfacing metal, wood, and composition pulleys, to which it readily adheres, preventing slipping and cutting down wear. It safeguards workers when used as an insulator to cover switch handles and other electrical devices; and it prevents slipping when applied to metal and concrete stair treads. This product is also used by industry and government in repairing rubber boots and gloves.

• Tractor Lugs

When your heels are worn down you don't throw away your shoes. By the same reasoning why throw away tractor-track shoes because the grouser has become worn?

Operators can co-operate in the government plan to conserve metal by "re-treading" worn grouser shoes with Hercules Grip-Lugs, for any make of track-laying tractor, and do it faster and at less cost than by using new parts, often difficult to obtain.

Hercules track link plates rebuild a new long wearing rail surface to track-links. Both Grip-Lugs and plates are easily welded. Grip-Lugs are attached without dismantling the track. Hercules repointer bars for retipping shovel, bucket, drag-line, and scarifier teeth, too, can be welded on quickly, offer low cost repairs for your excavating equipment with minimum loss of "time out." These easily-welded parts may be obtained from the Hercules Steel Products Company, Buffalo.

• Bulldozer

Outstanding among the new earth moving units being introduced by La Plant-Choate Manufacturing Company, Inc., of Cedar Rapids, Iowa, as a part

Ty-Rod

THERE IS A

TYLER

Woven Wire Screen

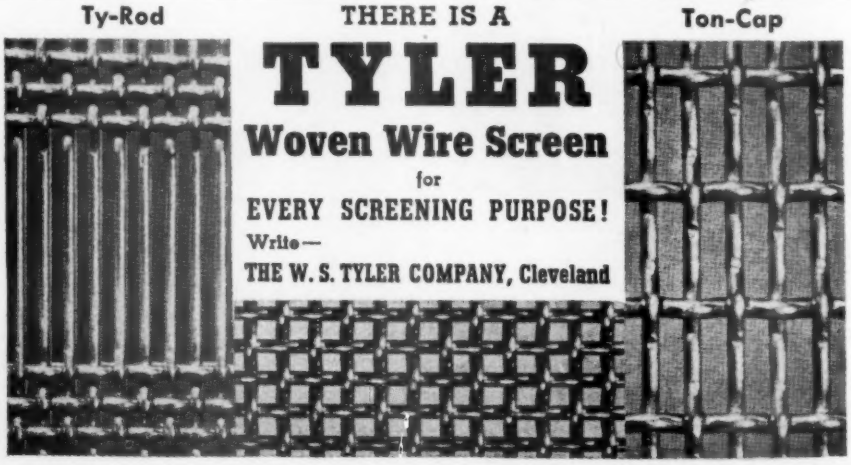
for

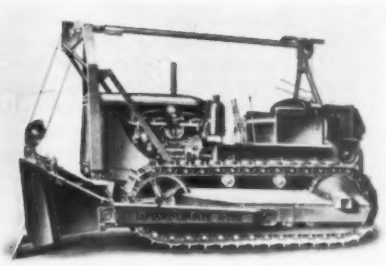
EVERY SCREENING PURPOSE!

Write—

THE W. S. TYLER COMPANY, Cleveland

Ton-Cap





The adjustable bulldozer.

of its post-war program, is the "Adjustadozer." This is a new type of dozer designed so its blade may be tilted in four positions—16 inches up or down at either end of blade and 3¼ inches forward or backward at top and bottom. In addition it can be held in straight bulldozing position. The blade can also be raised 45 inches above the ground line and dropped 6 feet below ground level. In raising a powerful lift is developed. The backward and forward tilting of the blade is a special feature of this machine. This model is cable operated

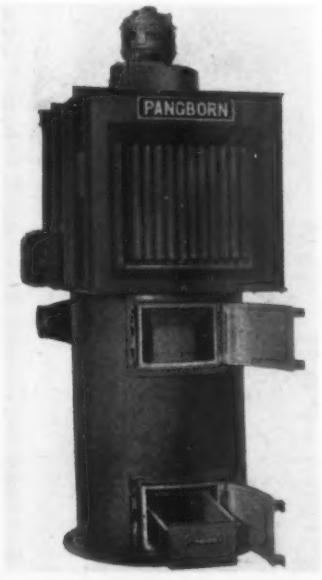
The various blade positions enable the "Adjustadozer" to perform a wide variety of earth-moving jobs. The tilt of the blade permits it to be used for opening shallow "V" ditches and doing hillside work, while the forward and backward tilt enables it to work effectively in different kinds of material, from loose dirt to rock. This tilt is also advantageous in leveling.

The main frame is heavy electrically-welded box channels, reinforced with steel plates. The blade consists of welded boxed plates of high tensile steel with moldboard designed for natural plow-like suction with proper curvature for digging and rolling material. The cutting edge of the blade is made up of three pieces with the center section reversible and the end sections hardfaced and replaceable.

The unit is designed for mounting on Caterpillar D-7 tractor.

• Dust Collector

The new Pangborn industrial type "CK" unit dust-collector is designed for smaller air-volume dust-control problems where a self-contained unit is indicated. It provides construction and performance consistent with the requirements of industrial operations, such as obtained by larger central-type dust-collecting installations.



Open view of collector.

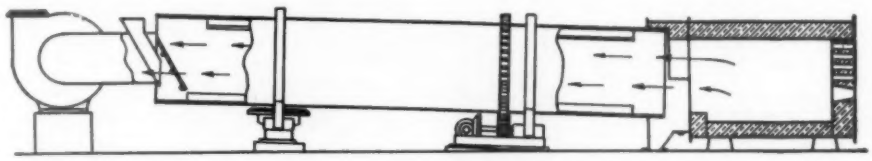
The unit consists of two major sections—a preliminary centrifugal section and a secondary cloth-screen section. Dust-laden air enters the centrifugal section where, due to a reduction in air velocity and centrifugal action, the bulk of the entrained material is separated from the air stream. The air, containing only the finely-divided dust particles, then flows upward to the secondary cloth-screen section where the fine dust is effectively filtered from the air. The cleaned air thence passes to the exhauster and is discharged.

The cloth-covered screen frames are provided with a shaking device which is operated at intervals, with the exhauster shut down, to free the cloth surfaces from collected fine dust. This dust, together with that precipitated from the preliminary centrifugal section, is deposited in the common dust drawer or receptacle for removal and disposal.

The unit is supplied in three sizes—1,000, 2,000 and 3,000 c.f.m. It is manufactured by the Pangborn Corporation, Hagerstown, Maryland.

• Sheave

A new sheave, designed for quick and easy mounting and demounting, has just been announced by the Allis-Chalmers Manufacturing Company, Milwaukee.



"Ruggles-Coles" Class "XF" Dryer

One of the nine types of rotary dryers designed and manufactured by Hardinge Company, Inc.

Hardinge Equipment

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Agitators	31-C
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"Ruggles-Coles" Dryers	16-C
Kilns and Coolers	16-C
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A recent survey showed that Ruggles-Coles dryers are drying over 150 different materials.

If you have a problem requiring the drying of any material, let us recommend the proper dryer.

Bulletin 16-C

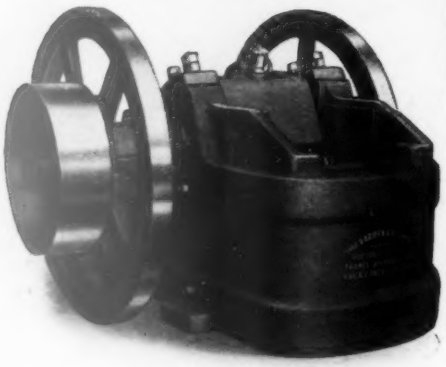
HARDINGE

COMPANY, INCORPORATED, YORK, PENNA.

NEW YORK CHICAGO SAN FRANCISCO TORONTO

FARREL BACON
CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.



EARLE C. BACON, Inc.
17 John St. New York, N. Y.

Four cubic yard trucks are loaded in slightly less than two minutes with bauxite ore on operations near Abbeville, Alabama with the Athey W4-1 MobiLoader. This tractor loader has 1⅛-cubic yards bucket capacity and uses the overhead loading method, digging its load at the front and discharging the material overhead at the rear.

Known as the "Magic-Grip" sheave, it locks to the shaft in one tightening operation. As its tapered split bushing, which accommodates normal shaft tolerances, is drawn further into sheave, sheave, bushing and shaft are locked together simultaneously. This positive clamp fit makes sure that the "Magic-Grip" sheave is perfectly centered and secure . . . assuring smooth running performance free from back-lash and shear.

The company states that the new design allows the sheave to be mounted closer to motor, increasing bearing life by reducing shaft overhang. They will be stocked in a complete line at no increase in price.

• Wire-Rope Handbook

A new book describing the manufacture of wire rope, with particular stress on its uses in wartime, has been published by the Wire Rope Corporation of America, New Haven, Connecticut.

The book shows laboratories in which tests are being made to learn tensile strength. The process of winding the wire from coil to spool and its automatic electric precision welding are outlined. Stranding is next shown, with photographs and text outlining clearly how any number of wires can be laid around the core in a given design.

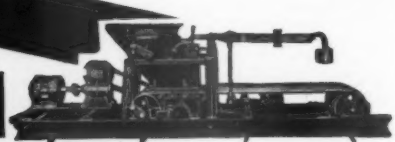
Another section of the book describes the core of the wire rope. The core is the resilient cushion on which the strands may move when the wire rope is in operation. The book shows how the core is built into the wire rope and how it holds lubricant essential for the reduction of friction between wires and strands and for protection against corrosion. Still another section of the book describes the final operation in fabricating wire rope which is "closing," the process which closes the individual strands around the core.

All Roads lead to Economy with
SCHAFFER POIDOMETERS

For WEIGHING

For FEEDING

For PROPORTIONING



SCHAFFER Poidometers for proportioning raw and finished materials will keep you on the road to production profits.

Poidometers are standard for precision weighing equipment in modern plants, and they insure faster operation, greater product uniformity, and lower operating costs.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman Ave., Pittsburgh 22, Pa.

TRADE NOTES

H. S. Chafee, treasurer of Builders Iron Foundry, Providence, Rhode Island, and L. E. Harper, president of Omega Machine Company of Kansas City, Missouri, announce a consolidation whereby the latter becomes a wholly owned subsidiary of Builders Iron Foundry. Mr. Harper continues as president and director of Omega and the company will continue at its present address, 3409 East 18th Street, Kansas City.

Arthur F. Noyes has been named truck-tire manager for the Pacific coast area of the B. F. Goodrich Company, with headquarters in Los Angeles. Succeeding him on the Akron staff of the truck and bus tire department is L. H. "Larry" Taylor, formerly assistant manager of the company's tire service department. H. J. Poole, truck and bus tire representative in Jacksonville, Florida district will assume this post.

The United States Asbestos Division of Raybestos-Manhattan, Inc., received the Army-Navy "E" Award for Excellence in Production on January 8.

Appointment of Henry Rowold as vice president of the Mack-International Motor Truck Corporation has been announced. Mr. Rowold joined the Mack organization in 1919. He was placed in charge of national account sales in 1939, and as vice president will continue in that capacity.

The opening of an enlarged New York

and export office at 50 Church Street has been announced by the H. K. Porter Company, Inc., Pittsburgh. The new office will serve as an eastern center for the company's line of locomotives, process equipment and pumps.

Reports of recent expansion of business firms in St. Louis, includes the Gruendler Crusher & Pulverizer Company, 2915 North Market Street, which has purchased a two-story brick factory building at 1911-1915 North Market Street.

The Navy Board for Production Awards has granted the Barberton Plant of The Babcock & Wilcox Company a new Army-Navy "E" Pennant with three stars affixed. The Navy "E" Flag was awarded to the company in April 1942; this was later changed to the Army-Navy "E", and renewals, for maintaining high standards of achievement, have been granted every six months.

Trade Literature

The pieces of literature listed below can be obtained direct from the manufacturers named, or requests can be addressed to Pit and Quarry's "Service to Readers" Department.

ELECTRONIC CONTROL — FUNDAMENTALS AND APPLICATIONS, 12 pages. General Electric Company, Schenectady, New York.

FOUR WAYS TO SALVAGE, RECLAIM AND CONSERVE IRON CASTINGS BY ELECTRIC ARC WELDING, 8 pages. C. E. Phillips & Company, Chicago.

EIMCO CONTINUOUS VACUUM FILTERS, 48 pages. (Bulletin F2002). Eimco Corporation, Salt Lake City.

I-T-E CIRCUIT BREAKERS, 32 pages. (Catalog 1002). I-T-E Circuit Breaker Company, Philadelphia.

COLMONOY HARD FACING ALLOYS AND OVERLAY METALS, 8 pages. (Catalog 75). Wall-Colmonoy Corporation, Detroit.

HOUGH PAYLOADER TRACTOR SHOVELS, 4 pages. Frank G. Hough Company, Libertyville, Illinois.

NORBLO PORTABLES FOR DUST COLLECTION, 8 pages. (Bulletin 163-2). Northern Blower Company, Cleveland.

50-TON DIESEL-ELECTRIC INDUSTRIAL LOCOMOTIVE, 16 pages. General Electric Company, Schenectady, New York.

E-M HI-FUSE CONTROL, 4 pages. Electric Machinery & Manufacturing Company, Minneapolis.

G-T PACKINGS, 4 pages. Greene, Tweed & Company, New York City.

POWER DRAG SCRAPERS, 20 pages. DUROLITE WIRE ROPE BLOCKS, 8 pages. Sauerman Brothers, Inc., Chicago.

MANGANESE CAST BARS FO REPOINTING DIPPER TEETH. (leaflet). Allied Steel Products Company, Inc., Cleveland.

POST WAR CONSTRUCTION CAN BE DESIGNED NOW

Types of Projects Solicited

SILOS—"Sliding Form" Method
STORAGE—for all Granular materials
BUILDINGS OF ALL TYPES—
Industrial or Commercial

Retaining Walls **Pumping Stations**
Reservoirs **Cement Plants**

YOU CAN PROFIT BY OUR TWENTY-FIVE YEARS EXPERIENCE

Our engineers and construction crews are available for quick construction

E. C. MACHIN COMPANY
BUILDERS
Commonwealth Building—Allentown, Pa.

Want to know about a TOUGHER, LONGER LASTING SIZING SCREEN?

FOR CRUSHED STONE, SAND, GRAVEL AND OTHER ABRASIVES

This new folder No. 601-BE on "Buff-Aloy" Wire Cloth mailed promptly on request tells you about:

- Greater resistance to abrasion
- Many extra hours of service
- Greater strength
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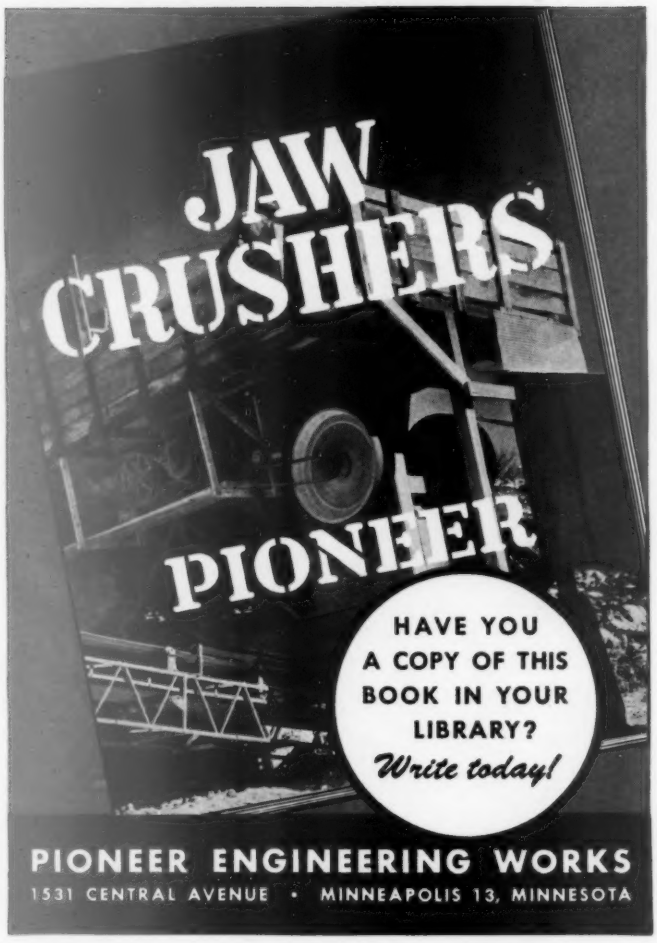
- Installations on vibrating screens
- Best way to order
- Wire diameters for mineral aggregate production screens

MANUFACTURER OF ALL KINDS OF WIRE CLOTH FOR 75 YEARS

Buffalo WIRE WORKS CO., INC.
ESTABLISHED 1869 AS SCHEELER'S SONS

526 TERRACE BUFFALO 2, N. Y.



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PERFORATED STEEL
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For WAR PRODUCTION and POST-WAR PROSPERITY

Combine ACCURATE SIZING with MAXIMUM PRODUCTION

Designed to fit VIBRATING, REVOLVING, SHAKING EQUIPMENT

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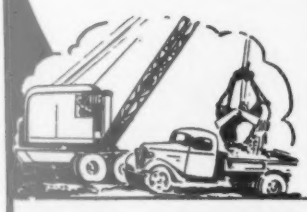
CARBONDALE, PENNSYLVANIA

WELLMAN WILLIAMS TYPE **BUCKETS**

Staying Power

Wellman Buckets stay right in there slugging it out in the toughest, roughest going.

WELDED ROLLED STEEL CONSTRUCTION is one big reason for **LONGER BUCKET LIFE!**



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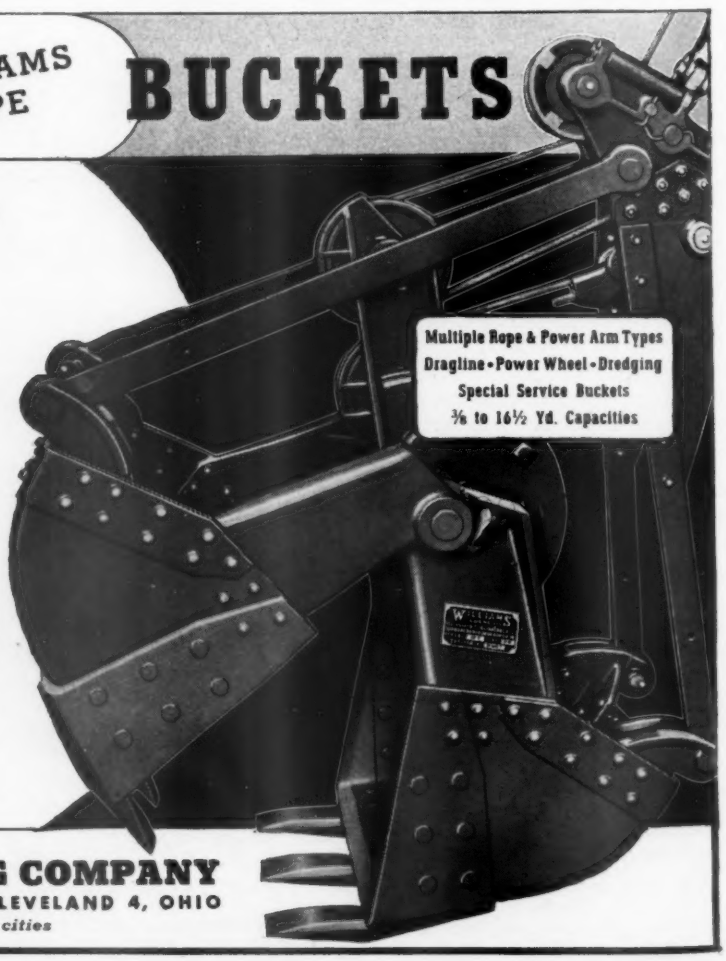
Tell us about your particular requirement and we will send full description of construction and special features in bulletins which clearly proves why YOUR NEXT BUCKET SHOULD BE A WELLMAN-WILLIAMS.



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TISCO
HADFIELDS
Manganese Steel
CHAIN

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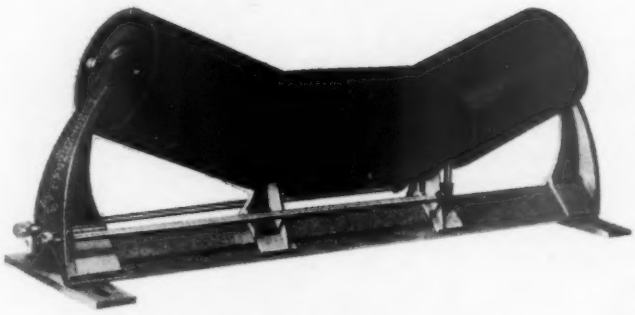

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FEBRUARY, 1944

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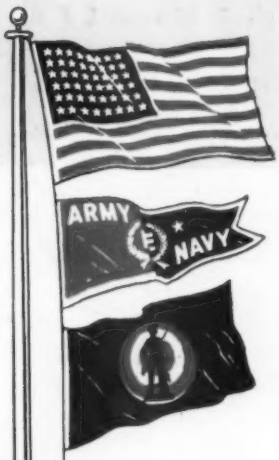

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The CONCRETE MANUFACTURER

FEBRUARY, 1944

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION MARKETING AND USES OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

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Products Bureau Adds Two Members to Staff

C. F. Moore has become a structural engineer for the Cement Products Bureau of the Portland Cement Association, Chicago, following a wide and varied experience in the building construction field. Before graduating from the University of Minnesota in 1920 he had obtained considerable experience detailing structural steel. After graduation he worked for four years in the bridge departments of the Burlington Railroad and the Minnesota Highway Department. The next eight years he was engaged in designing and detailing reinforced concrete and steel structures in the offices of the Berger Manufacturing Company, Truscon Steel Company and the C. A. P. Turner Company. During the past eleven years he was engineer for the Engineering Sales Company and the Adjustable Forms Company, where his work consisted of structural design for architects,

C. F. Moore

S. H. Westby

and designing, cost accounting, estimating and general field supervision of form work for concrete construction.

Sigfried H. Westby has also recently been appointed to the Cement Products Bureau staff. Mr. Westby is a civil engineer and has been actively engaged in this profession since graduating from the University of Illinois. He was first associated with a firm of consulting municipal engineers where be became familiar with concrete masonry in the construction of catch basins, manholes, inlets and meter vaults. Following this he was engaged in structural designing of power houses and office buildings for the H. M. Byllesby Corporation. He next became an assistant highway engineer for the state of Illinois where he helped design and construct many structures of concrete masonry which have since become standards of construction.

"Ted" Merriam Leaves PCA; Joins Stearns

T. H. Merriam

T. H. Merriam will join the staff of The Stearns Manufacturing Company, with headquarters at Adrian, Michigan, on March 1.

Familiarly known as "Ted" to the concrete-products industry and to his host of friends, he will be director of field operations, and will act as consultant for manufacturing and technical problems relative to the concrete-products industry.

Following his graduation from the University of Illinois in 1923, Mr. Merriam was an instructor at Rio Grande College, Rio Grande, Ohio, and at Ohio State University, Columbus, Ohio. In 1928 he joined the staff of the general office of the Portland Cement Association at Chicago and was under the direction of W. D. M. Allan in the Cement Products Bureau. Among the interesting matters that he had the opportunity of working on with Mr. Allan were the first light-weight aggregate promotion, the original series of fire tests on concrete masonry, the concrete-products manufacturers' schools, and the concrete contractors conferences. During these activities he had the opportunity to visit concrete-product plants throughout the country.

When the Michigan office of the association was reopened in 1937 he became its concrete-products and housing field engineer, under the direction of A. M. Davis, district engineer. This gave him an opportunity to take an active part in the development of the concrete-masonry housing program that has been so successfully carried on by the Detroit Concrete Products Association and other concrete masonry manufacturers throughout the state.

Design of Mixtures, Merchandising Methods Interest Ready-Mix Makers

another ON THE SPOT report

WITH many vital topics included on the program, the sessions of the annual convention of the National Ready Mixed Concrete Association, held at the Hotel New Yorker in New York January 26, 27, and 28 were exceptionally well attended by producers, cement-company respresentatives, and equipment makers. Some of the sessions were held jointly with those of the National Sand & Gravel Association, meeting at the same time and place, and the reader is referred to the report of that convention for a complete story of what transpired. The sessions devoted exclusively to concrete are reported here.

Stephen Stepanian, who served the unexpired 1943 term of H. F. G. Pelsue, resigned, was re-elected president as were the other officers.

President Stepanian presided at the opening session of the concrete group on Wednesday morning, January 26. He reported in considerable detail on the war-time services the association had provided its members during the past year, and paid glowing tribute to the untiring efforts of the association's executive secretary, V. P. Ahearn, and its director of engineering, Stanton Walker. The almost 200 executive letters sent out by Mr. Ahearn were of incalculable help, Mr. Stepanian said, in keeping members informed of new government regulations and rulings vitally affecting their interests. In commenting on Mr. Walker's recent election to the chairmanship of the Highway Research Board, Mr. Stepanian pointed out that Mr. Walker's many technical affiliations directly benefit the association's members.

In closing Mr. Stepanian announced that membership in the association reached a new peak in 1943 with 48 new members, representing every section of the country, enrolling in the past year.

Speaking next as executive secretary of the association, Mr. Ahearn dwelt at length on the association's unsuccessful efforts to secure exemption of the ready-mixed-concrete industry from contract renegotiation. Although it was pointed out that active competition within the industry rendered virtually impossible any legitimate basis for renegotiation, the request was denied on the ground that the act made no provision for such an exemption. Mr. Ahearn strongly urged producers to observe the following precautions in regard to government regulations:

(1) Study carefully all contracting relationships to determine if there is any possible basis upon which they might be adjudged employment relationships.

(2) In all cases take the initiative in filing deferment applications with local Selective Service Boards before essential employees have been called into service.

(3) In obtaining settlement of a labor dispute insist upon the appointment of a tripartite panel. Under no circumstances agree to accept an arbitrator or referee.

(4) In leasing trucks and drivers to another firm note that the 3 per cent. tax on the transportation of property for hire is applicable.

Pointing out that industrial accidents are now causing a total of 270,000,000 lost man-hours per year, Mr. Ahearn urged that the association conduct an annual safety contest among producers of ready-mixed concrete. He stated that unless producers take the lead now in campaigning for safety in industry, labor unions will inevitably make the problem theirs.

Mr. Ahearn closed his report by reminding operators of the importance of maintaining their plants in the best possible condition in anticipation of the huge back-log of construction work that will be released after the war.

Proposed Special Price Order Following Mr. Ahearn, H. F. Thomson (General Materials Company, St. Louis) submitted his report on the *Proposed Special Price Order for Ready-Mixed Concrete and Concrete Products.* He disclosed that the subcommittee on ready-mixed concrete, of which he is chairman, has strongly urged the exemption of ready-mixed concrete from the proposed special price order, but that up to the present time no definite decision had been handed down by the Office of Price Administration. In making this recommendation, Mr. Thomson said, the subcommittee pointed out that producers of ready-mixed concrete in a sense compete with their own customers, who could, if quoted prices seemed too high, mix their own concrete in their own plants.

Mr. Thomson reminded producers

Representatives of the companies comprising the membership of the recently-formed Truck-Mixer Manufacturers' Bureau: Lemuel Smith, Ransome Concrete Machinery Co.; Arthur A. Levison, Blaw-Knox Co.; R. McLean, Jaeger Machine Co.; H. C. Peters, T. L. Smith Co.; T. H. Fleming, Concrete Transport Mixer Co.; B. T. Devine and G. K. Viall, Chain Belt Co.

Joseph H. Dixey, Transit Mix Concrete Corp., New York; A. R. Shiely, J. L. Shiely Co., St. Paul; J. F. McCracken, American Builders Supply Co., Louisville; C. W. Shirey, Waterloo, Iowa.

that only new operations were required to file price schedules under the General Maximum Price Order issued in March, 1942. Under the Proposed Special Price Order drawn up by the O.P.A. all producers would be required to file price schedules. A serious complication for producers, Mr. Thomson said, was an O.P.A. interpretation that any departure from a published price list would constitute a violation. As an example of what this would mean he cited the common practice of interpolating between two listed prices to obtain the price for an off-standard mix. He predicted that this practice would be outlawed under the proposed special price order in its present form.

In reply to a question from the floor, Mr. Thomson stated that O. P. A. approval is required for the establishment of an over-time charge if such charge was not made prior to March, 1942.

Merchandising Leading a panel discussion on the general subject of merchandising of ready-mixed concrete, Robert C. Collins (general sales manager, Warner Company, Philadelphia) asserted that the failure of producers to use standard-form contracts frequently results in customers demanding unreasonable service. Mr. Collins suggested that the following steps in merchandising are applicable to all producers:

(1) Initial contact and study of the job before submittal of a price.

(2) Review with the customer of the contract terms when submitting prices. Adjustment at this time of disagreements before closing contract.

(3) Servicing contract with strict adherence to its terms. Amicable discussion with the customer of problems and differences that may arise during the life of the contract.

While Mr. Collins doubted if any single form of specific proposal and sales contract could be applicable to all producers and all sections of the country, he suggested that the association might undertake a study of typical protective clauses in contract proposals by inviting producers to send in their forms. Mr. Collins answered questions from the floor pertaining to his company's practices in billing overtime. He stated that 30 minutes maximum unloading time is allowed for 5- to 6-cubic yard trucks and overtime is charged at the rate of $4 an hour.

Designing Mixtures There was an overflow attendance at the evening session of the National Ready Mixed Concrete Association on Thursday, January 27. More than a score of cement-company representatives were in the audience to augment the large group of producers who came to hear and participate in an open-forum discussion of the design of concrete mixtures. The session was taken up largely, however, with a thorough discussion of the use of air-entraining cements and to the reading of a paper by Stanton Walker on *The Application of the Theory of Probability in Design-for-Strength Specifications.*

Mr. Walker introduced the subject of air-entraining cements by describing some of the preliminary research made by the association, particularly in regard to the preparation and delivery of concrete using air-entraining cement by mixing in transit.

Vinsol resin is the only air-entraining material which has been recognized by the American Society for Testing Materials, the material being ground with the clinker at the time of manufacture. The outstanding advantage of concrete made with air-entraining cement is its proved ability to resist surface scaling in pavement work. Where ordinary concrete has been used, severe frost action and the use of calcium chloride and other salts to melt ice often result in surface scaling and early disintegration in the slab. Concrete made with air-entraining cement eliminates this fault to a high degree. The state of Ohio has already made the use of air-entraining cements mandatory for all pavement work and the general opinion was that other northern states are considering similar action at an early date.

It was pointed out that air-entraining cements are more fluffy and flow more freely than ordinary cements and, because of this high fluidity in a dry state, bins and hoppers must be air-tight to avoid serious leakage. Batching equipment must provide for a complete, positive shut-off of the flow of cement when the proper amount has entered the weighing hopper.

At least the same cement content per unit of volume should be maintained for air-entrained concrete as is used with normal paving mixtures. Slightly lower strengths will result, but these will usually still be ample for structural requirements. Some reduction in the amount of sand and water ordinarily used will usually be necessary. (About 3 per cent. less sand and about one-fourth gallon less of water has been suggested by the Portland Cement Association.)

Air-entrained concrete can be readily handled and spread because the mixture is very workable and does not segregate readily.

Even with a reduced water content, this improvement in workability is readily noticeable.

Mr. Walker reported briefly on

the experiments the association has carried out in co-operation with the Warner Company, Philadelphia. Air-tight mixing drums were found to have entrained entirely too much air — out of all proportion to the amount of Vinsol resin incorporated and far in excess of any safe limit for good strength.

Truck-mixers of the high-discharge type and open to the atmosphere built up less pressure and were found to be particularly well suited to preparing and delivering air-entrained concrete, reported Alexander Foster, Jr. (Warner Company, Philadelphia).

William S. Elliott, materials engineer of the New York City Department of Public Works, declared that he had found that by drilling vents into the end covers of low-discharge truck-mixers, air entrainment had been kept at safe proportions and that such trucks

Leonard W. and George H. Tews, Tews Lime & Cement Company, Milwaukee.

with vent holes were being used to a great extent in preparing concrete for paved areas in the city.

In line with the revised A.S.T.M. Tentative Specifications for Ready-Mixed Concrete (C-94-43T), which have just been released and considers ready-mixed concrete to have conformed with their strength requirements if: (1) the average all tests, or of five consecutive tests, is 100 per cent. of the specified strength, or (2) if no specimen tested has an average value of less than 80 per cent. of the specified strength, Mr. Walker offered his theory of probability in designing for strength. While the title is rather formidable, Mr. Walker's theory is simple and workable, involving a slight overdesign of mixtures to assure samples testing sufficiently high to meet the new specification requirements and the recording of past experience and job performances to establish the producer's tables of specified strengths. Member companies may expect to receive details of this development at an early date.

H. F. Thomson (General Material Company, St. Louis) presided at the session.

Renegotiating War Contracts With Joseph H. Dixey presiding, the ready-mixed-concrete group assembled Friday morning, January 28, for a business session, and to hear a talk on the renegotiation of war contracts.

Mr. Ahearn reported on the 1944 budget and received its approval; announced the formation of a committee to study merchandising methods, the results of which should be of great help to the industry when compiled.

A change in the by-laws of the group which combines the offices of secretary and treasurer and elects only four new directors annually for 3-year terms was reported by Mr. Foster and received the approval of the membership.

Maurice Hirsch, vice-chairman of the War Department's Price Adjustment Board, spoke on the topic of renegotiating ready-mixed-concrete contracts by the war agencies and impressed his listeners with his declaration that members of this industry have had little difficulty in coming to acceptable agreements so far. All but about one per cent. of the cases have been concluded by voluntary bilateral agreement, he reported. He assured every producer that each case of renegotiation will be treated with fairness and with full consideration of all the factors of production cost, including plant changes made necessary to expedite government work.

With the advent of war came a flood of government contracts and, since costs were incalculable due to rising prices and scarcities, costs often had to be guaranteed on the cost-plus-fixed-fee basis. Renegotiation applies no fixed rules for determining admissible or nonadmissible cost or expense items, the speaker said, although a general rule of allowing 6 per cent. profit on sales before taxes is usually employed. Most ready-mixed-concrete operators have produced material for both commercial work and government jobs in the same plant and economies which have cut operating costs all down the line will be properly considered and applied to both commercial and renegotiable sales in a just and satisfactory manner, Mr. Hirsch declared.

Recommended Practices The Friday afternoon session was devoted principally to the discussion of the *Proposed Manual of Recommended Practices* and general specification problems. It was presided over by Alexander Johnson (Central Concrete, Inc., Brooklyn). Stanton Walker opened the discussion by mentioning the new A.S.T.M. specifications for concrete and said that a bulletin by the association on this subject was then in the mail.

Mr. Walker described the arrangements made with the University of Maryland for the establishment there of a research laboratory for ready-mixed concrete, using the same facilities as the laboratory of the National Sand & Gravel Association. He also stated that field work will be continued as before but that more laboratory research will be done. He said that more study will be made of such subjects as concrete proportioning with regard

Speakers' table at the Ohio Ready Mixed Concrete Association luncheon: Otto S. Conrades, St. Louis Material & Supply Co., St. Louis; Stephen Stepanian, Arrow Sand & Gravel Co., Columbus, the new president of the National Ready-Mixed Concrete Association; Irving V. A. Huie, New York Commissioner of Public Works; Wm. F. Kern, Jr., Columbus Builders Supply Co.; Stanton Walker, National Ready-Mixed Concrete Association; Claude L. Clark, Ohio Ready-Mixed Concrete Association.

to different cements and aggregates, time of mixing, relation to volume change, durability, etc.

Mr. Johnson briefly reviewed the proposed manual and he and Mr. Walker commented on several chapters on which opinions from producers are especially desired. In the discussion it was pointed out by Miles N. Clair (Thompson-Lichtner Company, Boston) that the producer's control of his concrete should extend, at least in an advisory capacity, from the production of the aggregates to the placing of the concrete in the forms. A. R. Shiely (J. L. Shiely Company, St. Paul) suggested that a paragraph or two be included in the manual for the guidance of new or inexperienced producers, giving them the advantage of the experience of members on such things as the sequence in which ingredients should be discharged into a mixer, the education of drivers, etc. Mr. Clair then commented on the importance of the material contained in the technical section of the manual which he believed many operators would profit most by reading.

Arthur A. Levison (Blaw Knox Company, Pitsburgh) pointed out that most of the spade work on specifications and manuals of this type is done by a few engineers, operators and equipment men and expressed the opinion that comments from more producers would benefit all concerned because of the varied experiences they have had which would broaden the applicability of such specifications. An interesting development of this discussion was the fact that most of the transit-mix operators present use wash water in their truck-mixers after every load and retain that water for the next batch of concrete. Mr. Walker asked those present to send in any suggestions they might have to offer after carefully reading copies of the proposed manual.

H. C. Peters (T. L. Smith Company, Milwaukee) briefly reviewed the developments which led up to the formation of the Truck-Mixer Manufacturers' Bureau as reported elsewhere in this issue. This association of truck-mixer manufacturers, he said, has adopted the ready-mixed concrete association's standard system of rating truck-mixer capacities and has made some revisions to it. Drum-volume ratios have been established for all three types of mixers now being made—the horizontal drum, inclined drum, and open-top types. Steps are now being taken, said Mr. Peters, so that an operator will soon be able to buy any type or make of mixer and get the same actual capacity within limited tolerances.

Mr. Walker then closed the discussion by expressing the appreciation of the association for the cooperation it has received from the engineering personnel of the city of New York, many of whom were present at this and other meetings.

Mr. Shiely introduced the newly-elected president, Stephen Stepanian (Arrow Sand & Gravel Company, Columbus), who had taken over this position when H. F. G. Pelsue resigned because he had left the concrete industry. Mr. Stepanian briefly reviewed his connection with the industry since its "conception" about 30 years ago and with the association since it was formed. He also traced the growth of the industry from its infancy to the present and proudly commented on its production of $200,000,000 worth of concrete in 1942.

Mr. Stepanian also announced that the association had added 48 new members during the past year —9 from California alone. He urged that every member try to get others to join in order to make the association truly representative of the industry in every way. He also said that the association should make more capital of the high standing which both Mr. Ahearn and Mr. Walker enjoy in this field and among engineers and trade-association executives.

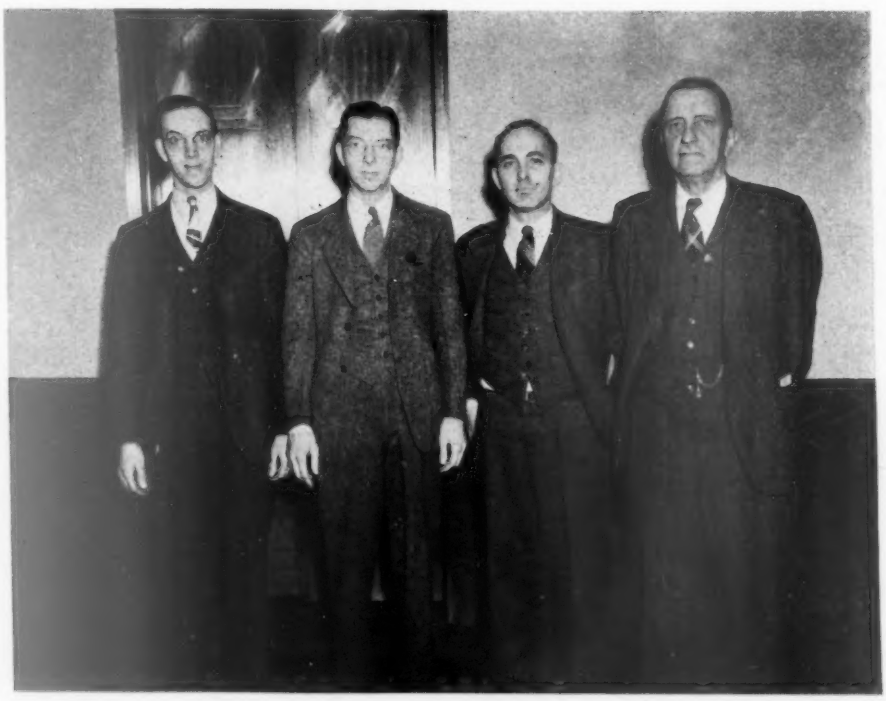
Directors' Meetings The outgoing board of directors of the National Ready-Mixed Concrete Association held its last meeting at the Hotel New Yorker at an evening session on January 25.

Director of Engineering Stanton Walker indicated that the production of ready-mixed concrete in 1943 decreased approximately 35 per cent. from the 1942 level. Reporting members who produced 11,186,455 cubic yards of concrete in 1942 manufactured only 7,283,943 cubic yards in 1943, according to a survey he had made.

Harry F. Thomson, chairman of the association's Technical Committee, discussed a proposal to co-operate with the National Sand & Gravel Association and the University of Maryland in the development of research activities dealing with ready-mixed concrete and a contract designed to give effect to the idea was approved. Dean S. S. Steinberg was present for the university.

The annual budget was approved and provision was made for the sum of $5,000 to be devoted to research during the coming year.

H. C. Peters, vice-president of the T. L. Smith Company, truck-mixer manufacturer of Milwaukee, presented to the board a brief history of the formation of a Truck-Mixer Manufacturers' Bureau and asked the board to approve sponsorship of the bureau by the association. (A description of the bureau's organization and objects is presented elsewhere in this issue of PIT AND



E. K. Hoffmeyer, Elmer Buese, W. R. Miller, and R. F. Moss, Scientific Concrete Service Corporation.

QUARRY.) The board approved the proposal in principle and recommended acceptance of it to the incoming board, which met three days later and gave its approval.

As evidence of the association's growth, it was reported that 48 new members had been acquired in 1943 and that the association's membership now includes 168 ready-mixed-concrete companies.

The incoming board met for the first time at lunch on January 28. Mr. Peters explained to its members the Truck-Mixer Manufacturers' Bureau and action approving his proposal that it become affiliated with the association was taken.

The board also decided that the association should become affiliated with the Highway Research Board, of which the association's director of engineering, Stanton Walker, is chairman.

A new executive committee, composed of the association's officers and A. R. Shiely, C. D. Gray, Herbert Jahncke, and E. J. Goodpastor, was chosen.

Truck-Mixer Manufacturers' Bureau

Consummating four years' effort on the part of a number of forward-looking and constructive manufacturers of truck-mounted concrete-mixing equipment, the organization of the Truck-Mixer Manufacturers' Bureau was completed on December 14, 1943. All the truck-mixer manufacturers — six companies—are members of the bureau. They are the Blaw-Knox Company of Blawnox, Pennsylvania; the Chain-Belt Company of Milwaukee; the Concrete Transport Mixer Company of St. Louis, Missouri; the Jaeger Machine Company of Columbus, Ohio; the Ransome Concrete Machinery Company of Dunellen, New Jersey; and the T. L. Smith Company of Milwaukee.

H. C. Peters, vice-president of the T. L. Smith Company, is chairman of the bureau; A. A. Levison, manager of the Construction Equipment Division of the Blaw-Knox Company, is secretary; and T. H. Fleming, president of the Concrete Transport Mixer Company, is treasurer.

As the idea of an organization of truck-mixer manufacturers was prompted principally by a regard for the best interests of truck-mixer users, the manufacturers who comprise its membership desired to become affiliated with the National Ready-Mixed Concrete Association and presented their program to the association's executive officers and staff on January 25. On January 28 the incoming board of directors of the association, after full and careful study of the proposal, gave its approval and the bureau became an affiliate of the association. The resulting relationship between the Truck-Mixer Manufacturers' Bureau and the National Ready-Mixed Concrete Association is similar to that between the Mixer Manufacturers' Bureau and the Associated General Contractors of America.

The objects of the bureau are stated by its by-laws to be "to effect standardization of truck-mixers with a view towards simplification and standardization of sizes and capacities as well as other mechanical standards associated with the manufacture and use of truck-mixers". The by-laws authorize the bureau "in general to perform such other acts and services for its members and the users of the products of its members as may lead to economies in manufacture and use, to higher qualities of product, and to better service for those who use the products of the members of the bureau" . . . "as well as for the general public".

To give effect to these purposes the bureau has set up a Technical Committee composed of the following members: L. G. Hilkemeier (Chain-Belt Company), chairman; L. J. Sarosdy (Blaw-Knox Company); T. H. Fleming (Concrete Transport Mixer Company); C. I. Bohmer (Jaeger Machine Company); J. P. Faber (Ransome Concrete Machinery Company); and R. J. Barnes (T. L. Smith Company).

At a luncheon meeting of the Ohio Ready-Mixed Concrete Association Major Huey, Commissioner of Public Works for New York City, read a short paper on post-war planning in New York. He disclosed that detailed plans are on hand for widely diversified projects that will cost $176,000,000, and that many of these projects can be started immediately after the war. The total post-war construction program in New York City will amount to $1,000,000,000, Major Huey said, and will require 8,700,000 cubic yards of gravel, 6,000,000 cubic yards of sand, and 15,000,000 barrels of cement. At its height this construction program will employ 200,000 men.

There were 40 members of the Ohio association and their guests present at the luncheon.

Mineral-Wool Output Reaches High Level

Mineral-wool manufacturers of the United States in 1942 marketed processed materials valued at nearly $33,000,000, according to a survey of the Bureau of Mines.

A total of 41 companies, operating 52 plants in 18 States turned out 513,072 tons of mineral wool products for insulation and other purposes valued at $31,656,927, and 5,624,106 linear feet of pipe covering valued at $1,149,881.

Many of the plants operated at capacity levels during the year. Expanded industrial facilities, plus improved manufacturing techniques perfected during the year enabled producers to keep pace with the demand. To stabilize production and employment, a program was fostered this year to encourage dealers to purchase monthly rather than seasonally. At present plants are operating only at about 75 per cent. of their potential capacity, owing to a lack of manpower and inability to secure replacements for worn-out equipment.

The 52 plants of the United States last year utilized 11 types of raw materials, which included slag, 39 companies; limestone 23; wool rock 18; glass batch 8; shale 6; clay 6; silica rock 3; pit gravel 2; and dolomite, iron ore, and sandstone, 1 each. Fuel used in all of these processes amounted to 110,070 tons of coal; 131,444 tons of coke; 12,215,716 gallons of oil; 450,930,654 cubic feet of gas, and 33,849,979 kilowatt hours of electricity. Improvements in melting technique increased the output of mineral wool per ton of fuel from 2 to 1 to about 4 to 1 as an average, with a maximum of 6 to 1 in several plants.

Hemp-Processing Plants Using Immense Quantities of Blocks

Part of the storage yard of the Rockford Cement Products Company with plant in distance.

By HARRY F. UTLEY

ONE of the important jobs served in the fall of 1943 by the Rockford Cement Products Company of Rockford, Illinois, was a hemp-processing plant which was erected by the Defense Plant Corporation for War Hemp Industries, Inc. Forty-two plants, all similar in design, are being constructed in six states of the middle west and practically all are of concrete-masonry construction. Eleven plants are located in Illinois, a like number in Iowa and in Minnesota, 6 are in Wisconsin, 2 in Indiana, and 1 in Kentucky. Each plant requires the equivalent of about 36,000 standard 8-inch units—a total of nearly 1,500,000 units for all. The floors and, in most cases, the roofs are also of concrete.

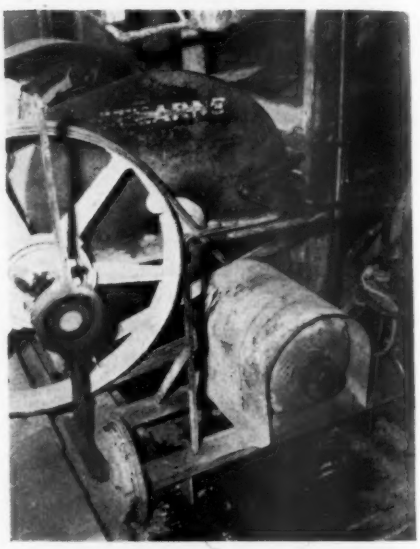
The units produced at the Rockford plant are made on a Number 7 Stearns Joltcrete machine and are transported to the job by a contract trucker who makes nearly all the company's deliveries.

The Rockford Cement Products Company is one of the pioneer producers in that area. F. C. Burritt, who heads the concern and manages its affairs, was in the real-estate business 32 years ago, when he had the chance to acquire a small block plant which he began operating on a royalty basis. Realizing its shortcomings, he bought it outright, equipped it with the latest type of hand-operated machines, and found that the improvement resulted in a bigger profit.

"As fast as new equipment that gave promise of increasing the efficiency of our operations was developed, we installed that equipment," relates Mr. Burritt. "We never felt that any of the machines we installed was an unnecessary expense; each one paid for itself, and then some. I've seen many of my competitors go broke because they tried to make a profit with outmoded equipment that was too costly to operate. The old axiom that says you've got to spend money to make money is just as true in the concrete-block industry as in any other."

Dealers in outlying towns handle a good share of the output of the Rockford plant, the contract hauler previously mentioned handling the shipments. The company owns only one motor truck which is used merely for making emergency deliveries.

Both gravel and Waylite blocks are produced, the pea gravel and torpedo sand used being purchased locally, while the Waylite, in fine and coarse sizes, is shipped in by railroads from South Chicago. The aggregates are elevated 40 feet to a compartment bin which feeds a batcher on the mixing floor. All the mixing is done in a Stearns 27-cubic foot unit mounted on rails so that it can discharge either over the hopper of the Joltcrete machine or to a Stearns Clipper Stripper, recently purchased. The stripper is making



The wheel-mounted mixer and drive.

The two block-making machines with F. C. Burritt, who heads the company, standing in front of the tamper.

A view in the curing room. Note insulated ceiling.

● Securing economical distribution and compact plant design, this Barber-Greene system of conveyors was worked out to screen into three sizes. Outstanding is the fact that the three B-G stockpiling conveyors are supported out of the pile by B-G steel A-frame supports, greatly aiding reclaimation operations.

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rock-face and 6-inch plain units, the remainder of the production being handled by the Joltcrete.

Chase steel racks mounted on flanged wheels move on narrow-gage tracks into the curing room. This is one large room 40 by 80 feet in size with a low, insulated roof, the tracks being arranged to make the entire area usable with no waste space. A stoker-fired furnace with forced-air heat is used only in the winter months to warm the curing room.

The largest job served by the company was the East Rockford Senior High School, erected in 1939. More than 150,000 units, all Waylite, were used in erecting the structure.

Opens New Plant

Production has started at the new concrete-products plant of the Tamaroa Home Lumber Company at Tamaroa, Illinois, according to Eugene Mayor, manager. Both gravel and cinder units are being produced on a Besser Vibrapac machine. A waterproofing compound is being used in all batches.

Herman A. Witte, 54, for 31 years a salesman for the Tews Lime & Cement Company, Milwaukee, passed away on November 11 at his home in Milwaukee after an illness lasting six months

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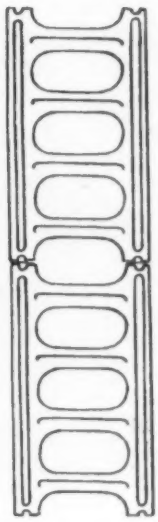

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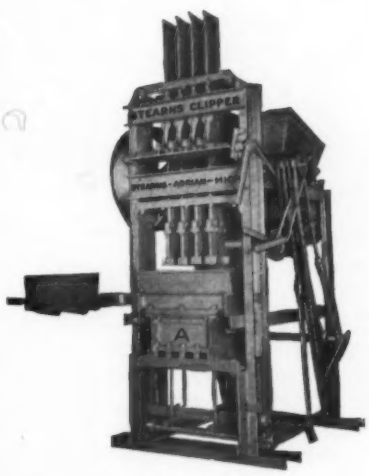

The Clipper Stripper, shown above, available in 5 models, is only one of the popular machines in the ANCHOR Line of Complete Equipment for the Concrete Products Plant. ANCHOR Engineering Service in the design of new plants or revamping older operations is nationally famous. Consult us before you buy equipment or modernize your plant . . . it costs no more.

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Pipe Plant Erected in Alabama to Supply War-Project Needs

The plant of the Universal Concrete Pipe Company at Decatur, Alabama, with shed over large machine in right background.

THE Universal Concrete Pipe Company of Columbus, Ohio, is one of the largest concrete-pipe manufacturers in this country, operating as many as 32 plants at one time in different parts of the country. Some of these are permanent operations supplying the needs of communities in which there is a large steady demand. Others are temporary plants which supply the requirements of some large construction project. In recent years the latter type of plant has predominated due to the war construction boom which has required huge quantities of concrete pipe for air fields, army camps and other projects.

Such a plant is operated by this company at Decatur, Alabama. It was erected in August, 1941, to supply the pipe for the Huntsville Arsenal and ran nearly a year on this order. Then a contract was obtained for the Courtland Air Base, a half-million dollar order that had to be completed within 90 days. Included were 2,375 feet of 72-inch, 4,321 feet of 84-inch and 5,210 feet of 96-inch pipe. The 72-inch pipe weighs 1,835 pounds, the 84-inch 2,000 pounds, and the 96-inch pipe, 2,500 pounds per foot. For this order the standard pipe machine in this plant was supplemented by a large machine which makes pipe from 42 to 96 inches in diameter. Only the 72-inch pipes in this order were made on this machine, however, as the larger pipes could only be hauled one to a truck and the comparatively long haul made this too expensive. Instead a temporary casting plant was operated at Town Creek near the project to make the 84- and 96-inch pipe. These were made in 5-foot lengths.

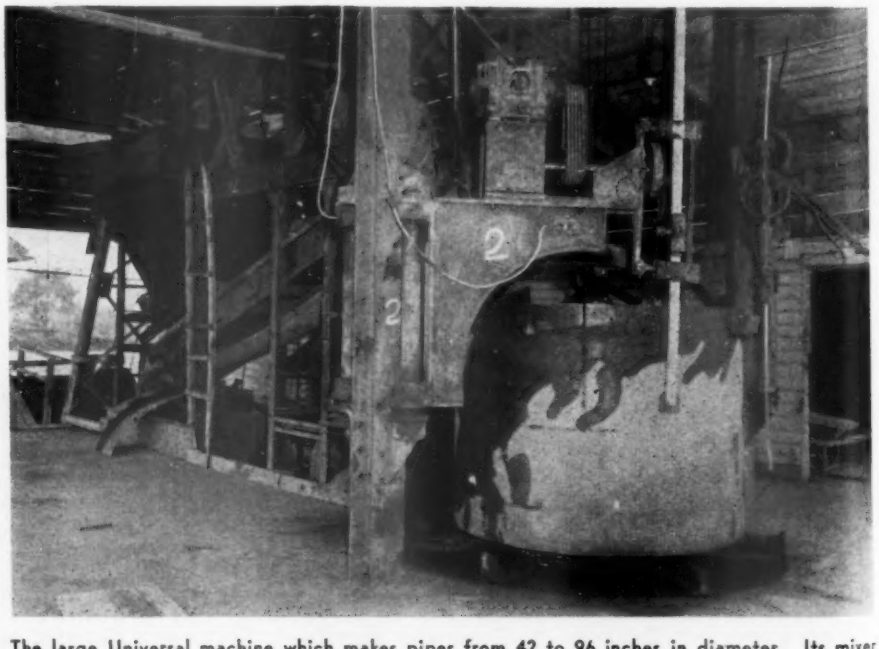
After this order was completed the plant also supplied pipe for many smaller war projects. Now that this type of work is practically all completed many orders with lower priorities which formerly had to be turned down are being filled. The pent-up demand makes it possible that this plant may be permanently located at Decatur.

The sand and crushed-stone aggregates used in this plant are brought in by trucks and dumped into piles from which they are hauled in wheelbarrows to the mixers. Underslung wheelbarrows with sugar-scoop-type bodies are used. Cement is dumped into the mixers from sacks.

The 28-cubic foot Stearns mixer for the standard pipe machine has its top level with the floor. The concrete is discharged into a skip bucket which is operated by a Yale hoist. This pipe machine is the standard Universal design with two tampers, a revolving table and an electric core-hoist. It makes pipe from 6 to 60 inches in diameter in either tongue-and-groove or bell-and-spigot types.

One of the underslung wheelbarrows being used to feed aggregates to the 28-cubic foot mixer.

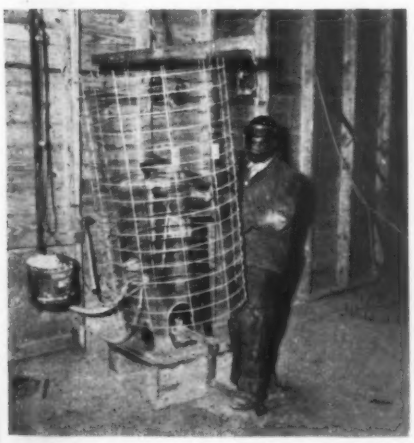
The 38-cubic foot Stearns mixer for the large Universal pipe machine discharges the concrete into a skip bucket which feeds it into a hopper. A screw-feeder discharges the con-



The large Universal machine which makes pipes from 42 to 96 inches in diameter. Its mixer and skip are in background.

The machine which is used to make pipes from 6 to 60 inches in diameter. An off-bearing cart is at left.

crete on an 18-inch by 50-foot inclined belt-conveyor from which it is discharged into the pipe forms. The machine has three tampers and a revolving table which is driven by a 40-horsepower motor through V-belts, gears and a clutch. Each tamper is V-belt-driven by a 5-horsepower motor and the core is lifted by a Yale hoist with a 5-horsepower integral motor. This machine makes an average of fifty-four 4-foot sections of 72-inch pipe daily.



The machine used for welding the wire mesh cages used for pipe reinforcing.

A Universal 4-wheel hydraulic cart is used to carry pipes 30 inches and larger to and from the curing rooms. Two-wheeled carts are used for smaller pipes. Steam is used for curing only in cold weather. Otherwise wet burlap bags are used.

The wire-mesh reinforcing cages used in the pipes made in this plant are spot welded by a machine made by the Thomson-Gibb Electric Welding Company.

Tentative Specifications for Ready-Mixed Concrete

The American Society for Testing Materials has recently issued a late revision of the *Tentative Specifications for Ready-Mixed Concrete,* the correct specifications representing a complete re-draft of the earlier editions. Designated as A.S.T.M. C94-43T, the tentative specifications represent an earnest effort to comply with the many suggestions and criticisms which had been received, and it is believed that many ambiguities have been eliminated.

While many changes are incorporated in the new recommendations, producers will be particularly interested in the following:

(1) Section 4 now includes a table of suggested strengths of ready-mixed concrete for various conditions of exposure. The table gives recommended strengths for concrete under a wide variety of conditions for both severe and mild climates.

(2) Section 8 sets up fairly specific requirements for the uniformity of concrete within the batch, and provides that the purchaser may make slump tests of individual samples taken at approximately the one-quarter and the three-quarter points in the batch, and if the slumps differ by more than two inches the mixer or agitator shall not be used unless the condition is corrected. The section further provides, however, that the equipment may still be used when operation with a longer mixing time or with a smaller load will satisfy the requirements of the comparative slump tests.

(3) Section 14 states a specific rule for determining if concrete meets strength specifications by requiring that "the average of all the strength tests representing each class of concrete as well as the average of any five consecutive strength tests representing each class of concrete shall be equal to or greater than the specified strength and no strength test shall have an average value less than 80 per cent. of the specified strength."

(4) Section 16 provides for a method of arbitration in the event that the manufacturer and the purchaser can not agree on a mutually satisfactory adjustment in respect to concrete which fails to meet the requirements of the specifications. The final decision in such cases shall be made by a panel of three qualified engineers, one designated by the purchaser, one by the manufacturer, and the third selected by the two appointees, and the panel shall be free to use any methods it considers appropriate and necessary to determine the quality of the concrete.

The tentative specifications are eligible for advancement to "standard" at the annual meeting of the American Society for Testing Materials in June.

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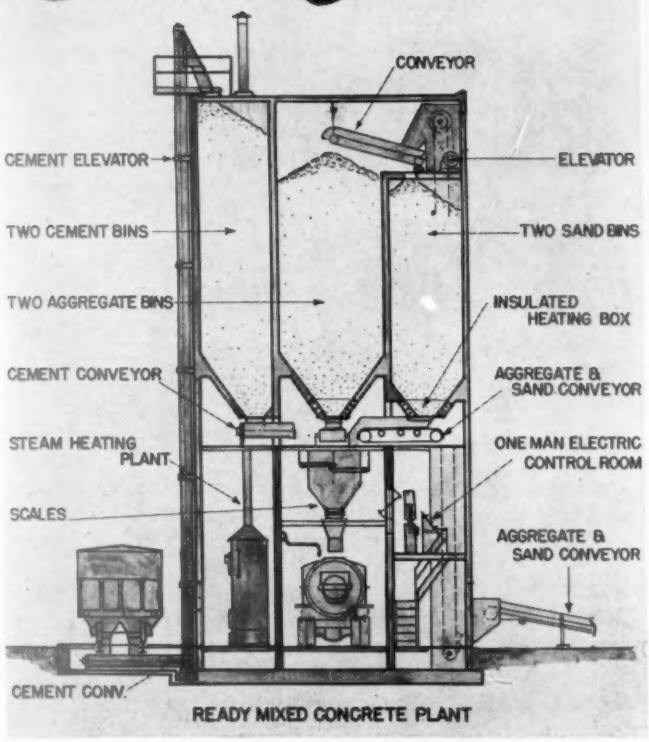

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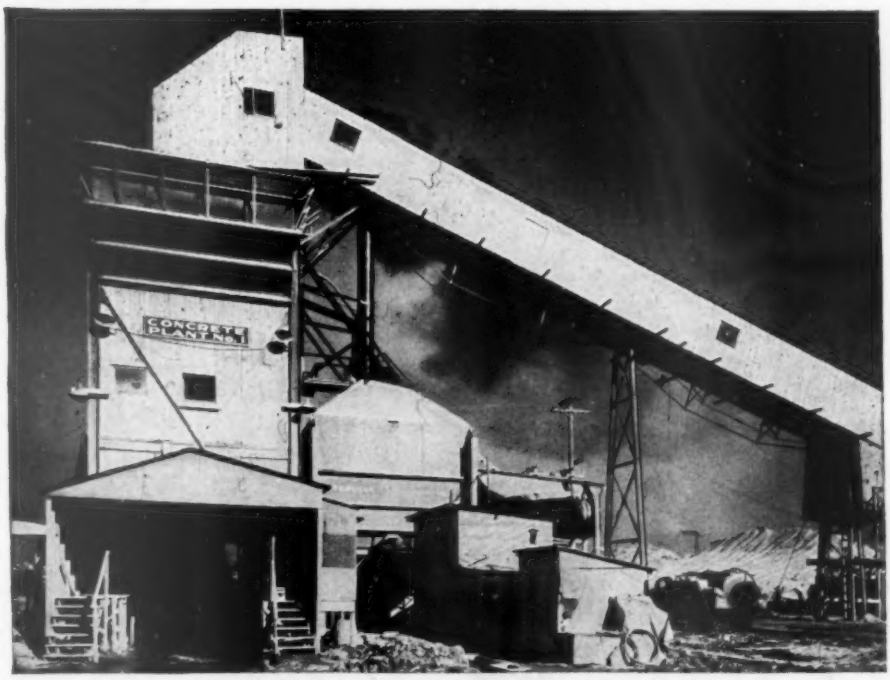

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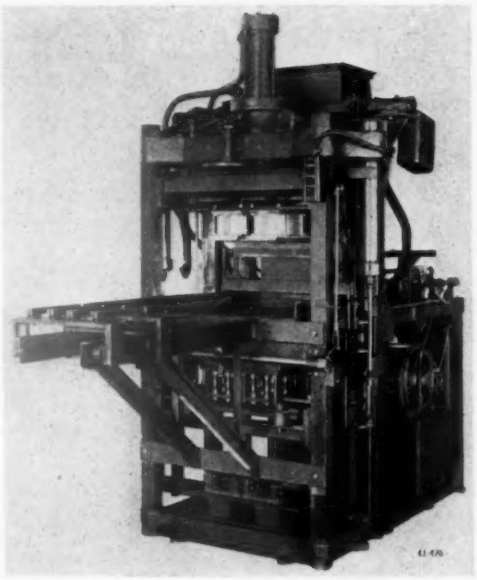

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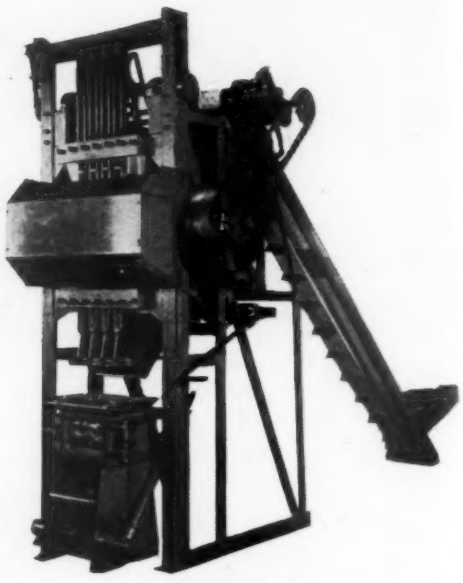

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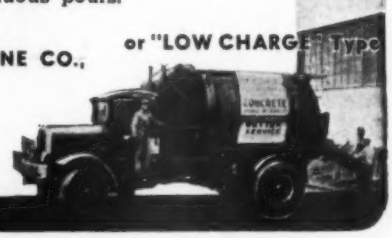

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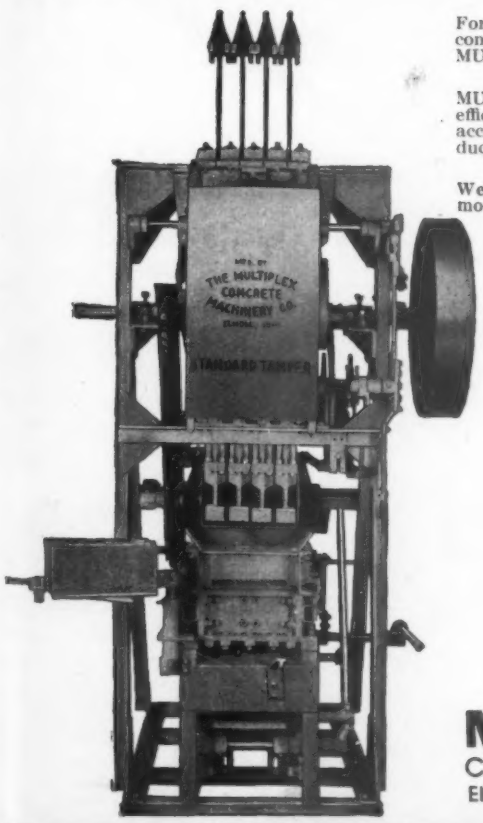

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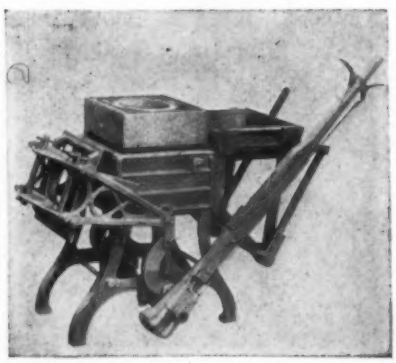

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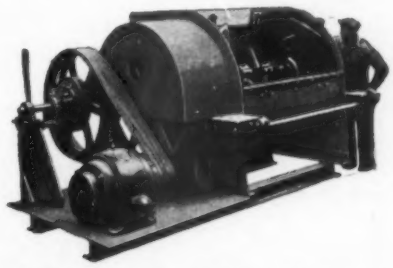

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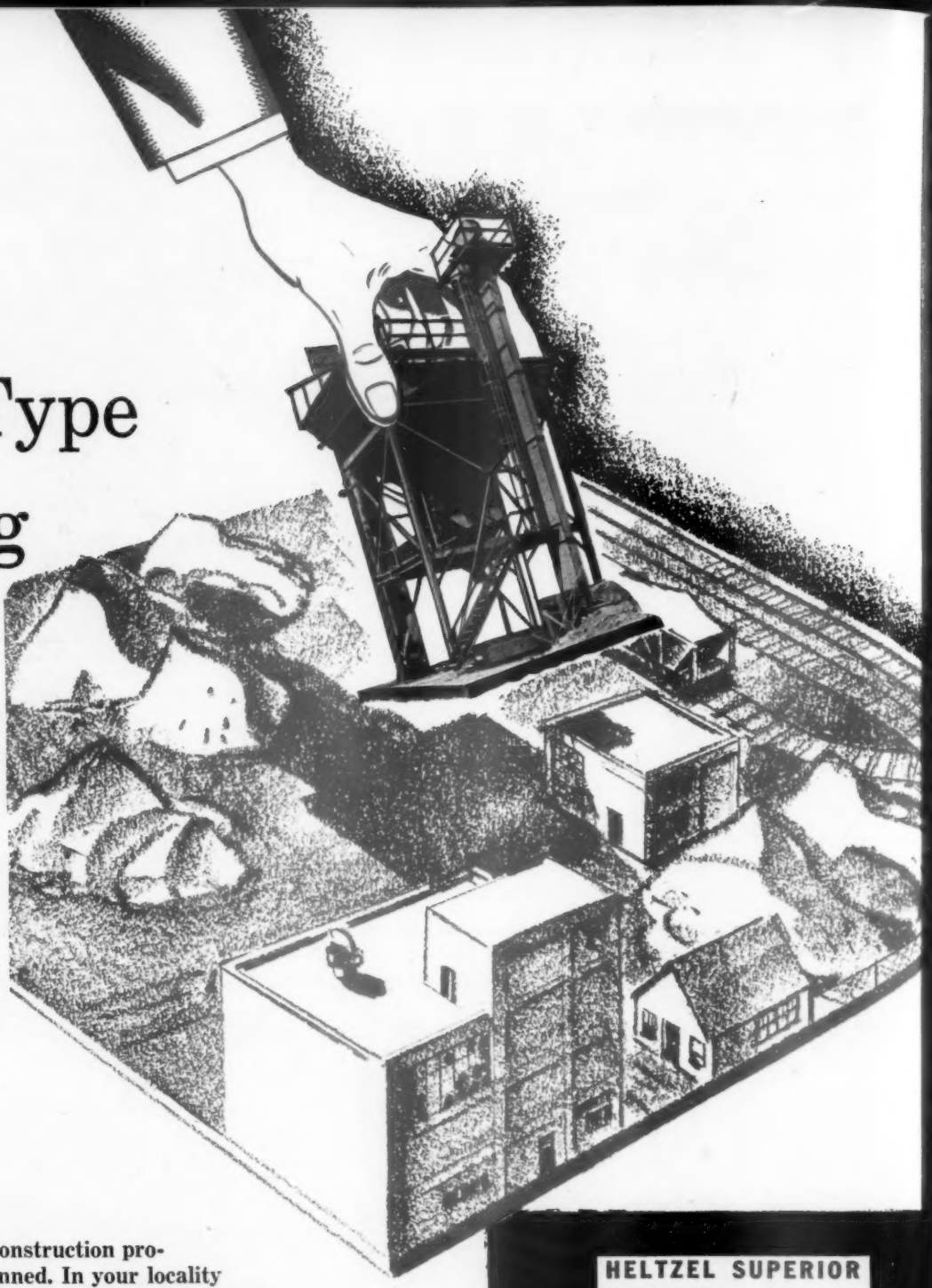

Most post-war concrete construction projects will go forward as planned. In your locality are many thousands of dollars worth of aggregate material and ready-mix concrete business already scheduled.

This business will demand certain changes and increases in your material handling equipment. Changes brought about by stepped-up war time production . . . changes that will be demanded in stepped-up post-war construction.

Is your present bin and batching equipment adequate for your share of this business?

Heltzel catalogs and bulletins on all types of material handling equipment are available. Heltzel engineers are ready to assist in any type of plant layout.

• *INVESTIGATE* •

HELTZEL SUPERIOR CONCRETE CONSTRUCTION EQUIPMENT

- MILITARY HIGHWAY FORMS
- AIRPORT FORMS
- DUAL DUTY AIRPORT FORMS
- CURB, CURB AND GUTTER OR SIDEWALK FORMS
- PORTABLE AGGREGATE BATCHING BINS —30 TO 100 TONS CAPACITY
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HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.

GOOD "HEADWORK"

Boosts Dredging Profits

Patented
HEAD
insures
continuous
pumping

The EAGLE Screen Nozzle Ladder—our nationally-used "Swintek"—furnishes a short cut to rich deposits inaccessible to plain suction machines.

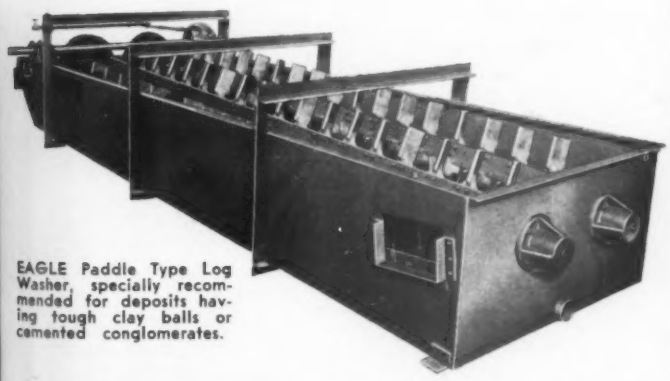
The patented nozzle head features a cutter-equipped screening and digging chain which eliminates slug pumping, and keeps a steady flow of solids to the suction line.

The "Swintek" affords maximum low-cost production by reducing power requirements and labor losses due to pumping delays, while increasing output up to 300%.

•

GET A HEAD START in the expanding concrete industry by supplying extra quality sand and gravel processed through EAGLE Washers.

"EAGLES" are available in a wide range of types and sizes to fit every need, with exclusive features that combine high capacity and operating economy.



EAGLE Paddle Type Log Washer, specially recommended for deposits having tough clay balls or cemented conglomerates.

Our Bulletin No. 41 describes other EAGLE Equipment, including Sand Drags, Sand Tanks and Screw Dewaterers, Dry and Wet Pans, Shale Removers, Steel Barges and Pontoons, and Steel Bins.

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DELIVERED POWER *Means* DELIVERED PROFITS!

Motor driven to Kiln through flexible couplings

The finest pit and quarry equipment is no more efficient than its power transmission.

L-R FLEXIBLE COUPLINGS

PROTECT
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CONVEYORS
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Take up shock. Correct for misalignment, whip, backlash. Insure smooth power flow. *L-R principle positively eliminates internal friction.* Loads on free-floating resilient cushions, hung between rugged jaws. Cushions always in sight for inspection. NON-LUBRICATED.

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Heavy duty type especially designed for power exposed to weather. For services from 4.60 to 806 h.p.

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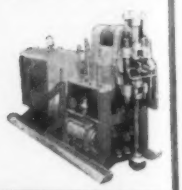
CONTRACTORS

Fire Clays, Coal, Limestone
Gravel Deposits, All Minerals



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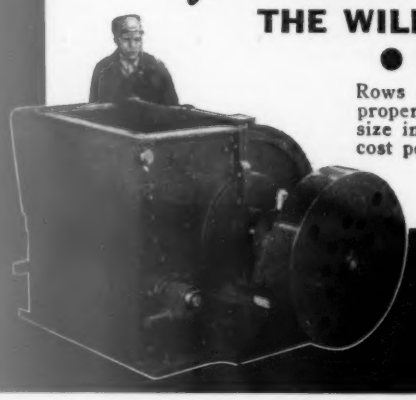
CORE DRILLING CO.
HUNTINGTON, W. VA.

for Making 1¼", ¾" or Agricultural Limestone...

THE WILLIAMS "SLUGGER" CRUSHER AND PULVERIZER

● Handles Large Stone or Screen Rejects ●



Rows of heavy, free swinging, fast revolving hammers, crush the material by impact until of proper size to pass through the grates. By reducing large rock to 1¼", ¾" or agricultural size in one operation, the "Slugger" has enabled operators to produce these sizes at a very low cost per ton and with small investment. Seven sizes—6 to 150 tons hourly capacity.

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OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS

AIR SEPARATORS
ROLLER MILLS
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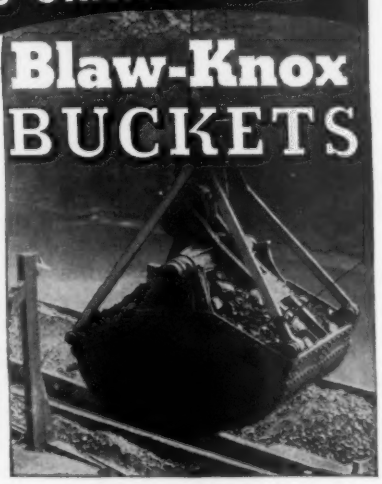
SHREDDERS

HANDLE MORE PAY LOAD WITH LESS CRANE TIME

Blaw-Knox BUCKETS



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Blaw-Knox buckets offer to industry the widest possible range of types and capacities specialized in application for the job; for excavating, rehandling, dredging, steel mill service, etc., in a word, for anything that can be handled profitably by a clamshell.

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2004 FARMERS BANK BUILDING, PITTSBURGH, PA.
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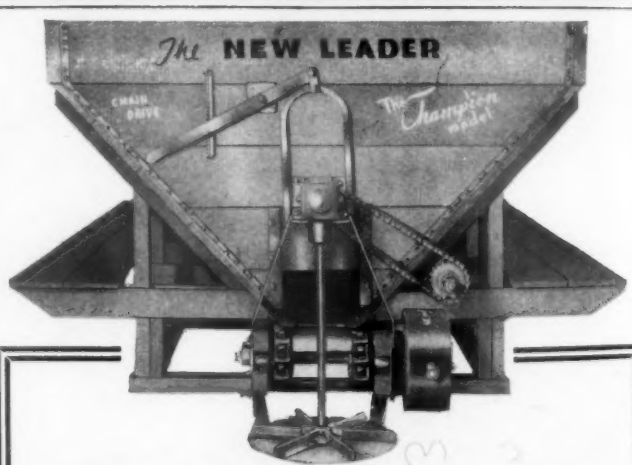

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LIME SPREADERS

Can Now Be Purchased Without Triple AAA Certificates or Priority

New • Improved • Heavier in Construction and Reinforcement • Built to Stand Hard Usage • Heavier Shaftings, Bolts, etc.

NEW LEADER Lime Spreaders can now be purchased with extra heavy duty pintle type conveyor chain. Positive-feed, self-unloading spreader will spread wet or dry lime uniformly from 30 to 45 feet in width.

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OTTAWA "JAYHAWK" HYDRAULIC FRONT END LOADER lifts loads of one-half yard to a height of 8 feet . . . will load two loads a minute. Shovel unit quickly attached or detached without altering tractor . . . bucket automatically stops in highest position . . . provides perfect visibility for operator.

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McLANAHAN EQUIPMENT *for*
• STONE
• SAND
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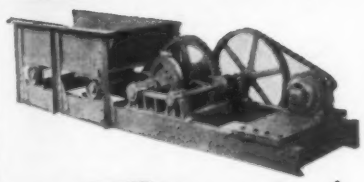
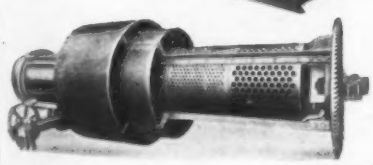
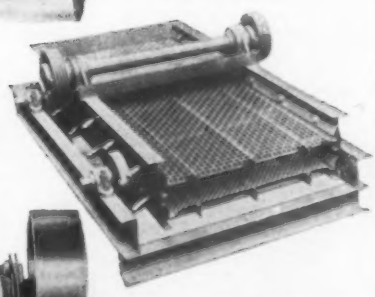
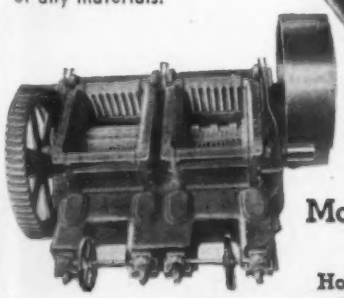




Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.





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McLanahan & Stone Corporation
Established 1835
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BIGGER payloads...
GREATER digability

Lightweight

To move more material ***faster,*** now . . . and after the war . . . wise contractors are getting HENDRIX Lightweight Dragline Buckets. They're getting the bucket with the inbuilt qualities of toughness, durability, and strength which assure years of trouble-free service. Round perforations, lightness and perfect balance are some of the many features which help the Hendrix Lightweight give unsurpassed performance in all kinds of digging. Available in three types—light, medium and heavy duty, from 3/8 to 20 cu. yds. capacity. Write for literature . . . or ask your dealer.

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than other buckets, type for type.
ALL WELDED CONSTUCTION
for greater strength and durability.
MANGANESE STEEL
chains, fittings and reversible tooth points.
FULL PAY LOAD EVERY TRIP . . .
gets the payload, leaves the water behind, in wet digging.
PERFECT BALANCE . . .
handles easier, fills faster, dumps quicker.

Also Available Without Perforations

HENDRIX *Lightweight* DRAGLINE BUCKETS

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Rx Prescription for Better Conveying

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BELT CONVEYORS

are "just what the Doctor ordered" for fast and profitable material handling.

CONSULT COLUMBUS for everything in the line of modern elevating and conveying machinery—from a single bucket to a complete plant!

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THE COLUMBUS CONVEYOR CO.
Columbus, Ohio

CHEMICALS ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS
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DENVER HYDRO-CLASSIFIER

The Denver Hydroclassifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in one revolution. Ask us how these machines will save you money. Write for new bulletin No. C4A-B.

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for maximum productive-screens from your vibrating
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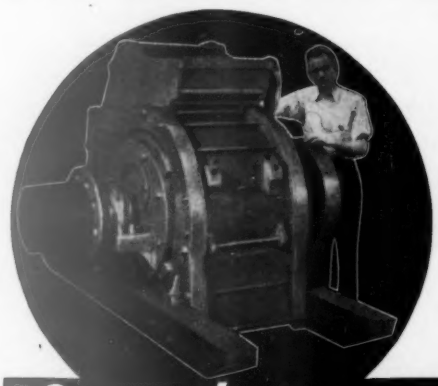

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Its wide crushing range makes it serve the purpose of two or more other types of crushers. Roller bearing equipped. Write for Bulletin.

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THE LIFE OF
CONVEYOR BELTS!

The most profitable investment in conveyor equipment! A pulley that saves at least 50% in conveyor belts! This exclusive Sprout-Waldron development prevents material from coming between the face of the pulley and the belt . . . eliminates the heavy friction wear and punching of holes. Interchangeable with standard pulleys. *Write for list of sizes available.*

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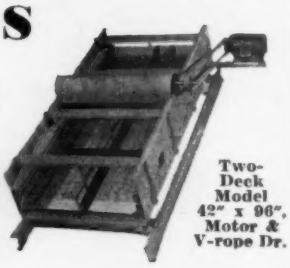
ELEVATORS, CONVEYORS, POWER TRANSMISSION EQUIPMENT

UNIVERSAL SCREENS

GUARANTEED to give you best results on your most difficult separations.

RUGGED - SIMPLE Construction. LOWEST in FIRST cost and MAINTENANCE cost.

Catalog No. 107.—32 pages on Screens and Screening is yours for the asking.



Two-Deck Model 42" x 96", Motor & V-rope Dr.

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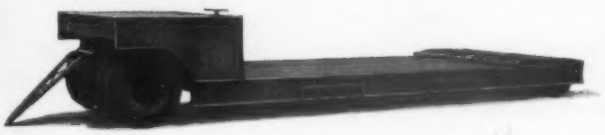

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SEMI or FULL
6 to 60 TON CAPACITY

Oscillating Rear Axles - Pneumatic Tires - Timken Taper Roller Bearings Throughout - Brakes are Manually Operated or Air Controlled.

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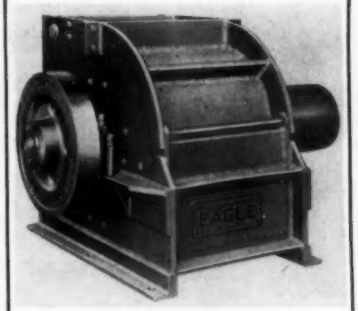
EAGLE *Dual-purpose*



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The EAGLE hammer crusher is adjustable for producing a cubical, uniform material to meet strict specifications for road building and construction requirements.

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This husky machine is a high-capacity-and-economy unit, with one-piece welded steel frame, and reversible hammers, special wear plates, screen bars and breaker plate.

Write us your requirements. There is an EAGLE which will handle your particular job.

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JAW CRUSHERS
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Keep your WIRE ROPE in good condition –on the job for the duration

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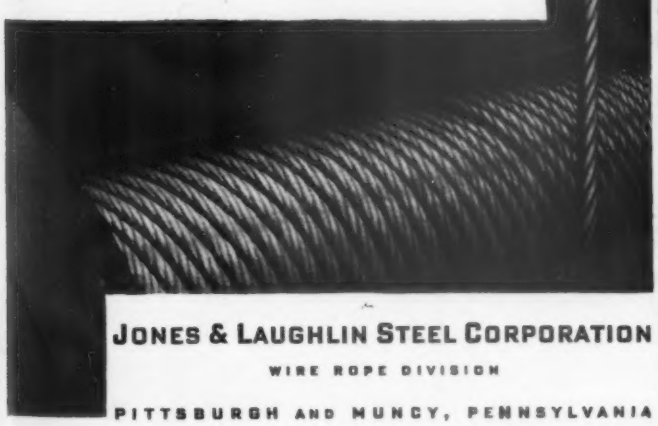
Wire rope is at war on all fronts—home front, production front, shipping front, battle front. Make every length of wire rope now in service last . . . by care . . . extra care . . . unceasing care. Use facilities and services of your source of supply for helping you care for your wire rope . . . get maximum ton-miles of service for seeing you through to victory.



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Stands the Gaff!

—now being made with ARPOLENE, the American synthetic rubber—

LIGHTNING *Ribbed Center* Conveyor Belt

—can take it! It overcomes both steep inclines and wet materials. It has yet to meet a moisture problem it could not solve, and carries more yardage per dollar of cost than any other belt.

The Ribbed Center
—keeps the load from slipping, even on the sharpest inclines.

For tough conveying jobs, see what this belt can do.

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Factory and General Offices:
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LOCOMOTIVE CRANES

1—20-Ton No. 4 Brownhoist, 8 wheel steam locomotive crane, 45' Lattice Boom, ASME Boiler with 2-yard coal handling bucket. Serial No. above 8280.

1—12-Ton Orton, 8 wheel steam locomotive crane, 35' Lattice Boom, Serial No. above 44750. Has ¾-yd. Owen bucket.

1—25-Ton McMyler, 8 wheel steam locomotive crane, 50-ft. Lattice Boom, in daily operation.

Location, Southern Michigan and Northern Ohio. Dealers' inquiries invited and protected.

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1—C. P. T. Cos, portable gasolene eng. driven, 210 cu. ft. compressor.
New Dryers built for all purposes.

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Wisconsin B 2 Gasoline Engine
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either new or used
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A DEPENDABLE SOURCE
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CARS — CRANES — COMPRESSORS
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SHOVELS — TRACTORS — ETC.
WE WELCOME YOUR INQUIRIES
WE WILL FIGURE WITH YOU ON YOUR SURPLUS

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Conveyor Belting...Transmission Belting...Elevator Belting...Fire, Water, Air, Steam, Suction or Welding Hose, etc.

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THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"
42"	5	1/8"	1/16"
36"	6	1/8"	1/16"
30"	6	1/8"	1/16"
30"	5	1/8"	1/16"
24"	5	1/8"	1/32"
24"	4	1/8"	1/32"
20"	5	1/8"	1/32"
20"	4	1/8"	1/32"
18"	4	1/8"	1/32"
16"	4	1/8"	1/32"
14"	4	1/16"	1/32"
12"	4	1/16"	1/32"

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

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PROTECT THAT PLANT
FIRE HOSE

APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY
RUBBER HOSE

WATER HOSE
Each Length with Couplings Attached

I.D. Size	Length	Per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1¼"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

LARGER SIZES ALSO AVAILABLE
All Prices—Net—F.O.B. New York

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62-66 PARK PLACE NEW YORK, N. Y.

SPECIAL VALUES

Stationary Asphalt Plant, 300 ton per day, Warren Bros., Bins, Elevators, 4'9" x 20'3" Dryers, Scales, Etc. Complete plant or individual items for sale.
24 x 18" American Hammermill. Can furnish on wheels with Climax power unit.
Koehring and Speedcranes and draglines.
3—100 to 150 HP Steam Boilers.
3, wheel and tandem 10 ton Steam Rollers.
110 ft. Portable gas air compressor.
72" x 35 ft. Rotary Dryer.
6,000 to 10,000 gallon steel storage tanks.
125 KW 3-60-220 V Diesel Generator.

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513 Locust St. St. Louis 1, Mo.

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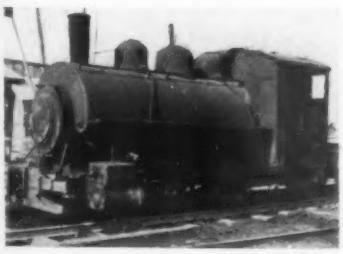

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Need cars for Coal, Coke, Ballast, Etc.? The following list has 767 such cars!

150, Hopper, Double, 50-Ton
45, Hopper, Side-Discharge, 50-Ton
10, Koppel, Side-Discharge, 24-Yd., 30-Ton
100, Refrigerator, 40-Ft., 40-Ton
16, Refrigerator, 36-Ft., 30-Ton
25, Ballast, Composite, 50-Ton
150, Box, 36-Ft., 40-Ton; Steel Ends
6, Dump, Magor, Automatic, 25-Yd., 50-Ton
8, Dump, Western, Automatic, 27-Yd., 40-Ton
2, Dump, Western, Automatic 20-Yd., 40-Ton
25, Flat, 40-Ft., 40-Ton
55, Gondola, Composite, 36-Ft. & 40-Ft., 40-Ton
150, Tank, 8000-Gallon, 40-Ton and 50-Ton

Perhaps this list also has some *other cars* you could use to very beneficial advantage *now*?

All cars are priced to sell!

IRON & STEEL PRODUCTS, INC.
39 years' experience
13490 S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

AGRICULTURAL LIME PLANT

Consisting of

56" x 40' Cummer Rotary Dryer, stoker fired

Raymond Pulverizer

Air Classifier, Collector and Bag Room

All in excellent condition and on original foundation

THE WILLIAM W. NEWELL COMPANY
P. O. Box 477 — Nashville, 2, Tenn.

FOR SALE

SHOVELS, DRAGLINES, LETOURNEAU WAGONS

Model 125 Marion Electric Dragline 100' boom 4 yard bucket.
52-B 2½ Yd. Bucyrus-Erie Electric Shovel.
Model 39-A Marion Dragline, 80' boom 2½—3 yard bucket. Hesselman oil engine.
K-480 Link Belt Dragline, 75' boom, 2 yard bucket, D-17000 Caterpillar engine.
K-48 Link Belt Dragline. Hesselman Oil Engine. 2 yard bucket.
43-B Bucyrus-Erie 1¾ yard gas shovel.
Model 6 Northwest Dragline-Crane. 60' boom.
Model 1500 Speed-Crane Dragline-Crane. 60' Boom.
4—14 yard 10-W Wagons with Tournopull. Model C Tractors with Cummins Diesel Engines.
2—344 Loomis "Clipper" Full Crawler Well Drills. Gas powered.

ALL THESE MACHINES ARE IN VERY GOOD CONDITION

FRANK SWABB EQUIPMENT COMPANY
Hazleton, Pennsylvania
Telephone — 3906

FOR SALE

Operator Called into Service

One 14x36 Jaw Crusher
One 16x24 Roll Crusher
Two bucket elevators
Two Vibrator Screens
Line Shafts & Belts
One 9 HP Diesel Engine
One 20 ft. Square bin and

Several other things:

I will furnish the Quarry and land on which to set up this machinery, and will accept one-half of the selling price in crushed stone and lime. Will make a big sacrifice to get someone capable to take this over and run it. This is a splendid proposition!

JOHN CASHMAN
Wilmington, Ohio

FOR SALE
DIESEL GENERATOR SETS

4—Self-contained General Motors Diesel Generator Sets, Series 71, 1—3 cylinder, 1—4 cylinder and 2—6 cylinder, rated respectively 45 KVA, 62½ KVA, & 75 KVA, 220/440 volt, 3 phase, 60 cycle generators. All less than 4 years old.
2—Fairbanks Morse, both Type Y, 75 & 150 HP, direct connected to 60 KVA and 140 KVA, 220/440 volt, 3 phase, 60 cycle generators.
3—Anderson Slow Speed Diesels, 1—225 HP, 4 cylinder, direct connected to 168 KW, 220 volt, 3 phase, 60 cycle generator; 1—100 HP, 2 cylinder with belted 40 KW, 220 volt, generator; 1—60 HP, 2 cylinder—Diesel only.
1—Atlas 200 HP, 450 RPM, belted to 150 KVA, 220 volt, 3 phase, 60 cycle generator.

CHARLES V. FISH
501 Commonwealth Bldg. Allentown, Penna.

LOCOMOTIVE CRANES & LOCOMOTIVES

40 ton cap'y Browning Loco. Crane
35 ton cap'y McMyler Loco. Crane
30 ton cap'y Industrial Loco. Crane
25 ton cap'y Browning Loco. Crane
15 ton cap'y Ohio Loco. Crane
12 ton cap'y Gas Powered Loco. Crane
50 ton cap'y Broad Gauge Loco Crane
20 ton cap'y Electric Locomotive
18 ton cap'y Locomotive Gas Power
30 ton cap'y Locomotive Steam Power
25 ton cap'y Locomotive Steam Power
60 ton cap'y Locomotive Gas Electric
65 ton Switching Locomotive
70 ton Shay Geared Locomotive
120 ton cap'y Locomotive 0-8-0
50 to 75 ton Stiff Leg Derricks
25 ton Cantry Crane, All Electric

SHOVELS - CRANES - CRAWLERS

⅜ yd. ¾ Swing Bay City Crane
⅜ yd. ¾ Swing Insley Crane
¾ yd. General Shovel
½ yd. Austin Crane
½ yd. Browning Crane
⅝ yd. P&H Crane-Dragline No. 300 A
½ yd. Northwest Crane No. 2 with 39" Magnet
1 yd. Lorain Shovel No. 75
1 yd. Osgood Crane-Dragline
1 yd. Bucyrus Erie Crane-Dragline-Shovel No. D-2
1 yd. P & H Crane-Dragline-Shovel No. 500
1¼ yd. Northwest Crane-Dragline No. 104
2 yd. Bucyrus Erie Crane-Dragline 50-B Steam

TRUCK CRANES

½ yd. Universal-Pneumatics-Outriggers
⅜ yd. O&S Solids
½ yd. Bay City-Pneumatics

ATTACHMENTS

Shovel for 35 Lorain
Shovel for 1¼ yd. Lorain
Shovel for No. 4 Northwest
Pull Shovel for 50-B Bucyrus Erie

BUCKETS - CLAMSHELL

½ yd. Owen-Gen. Purpose
½ yd. Lakewood, Gen. Purpose
⅝ yd. Owen Handler
⅝ yd. Blaw-Knox Handler
⅝ yd. Williams Digger
¾ yd. Williams Handler
¾ yd. Owen Handler
¾ yd. Erie, Gen. Purpose
¾ yd. Hayward Orange Peel
⅞ yd. Blaw-Knox Rehandler
1 yd. Owen Handler
1 yd. Williams Handler
1 yd. Brownhoist Handler
1 yd. Erie Handler
1 yd. Lakewood Handler
1¼ yd. Owen Coal Handler
1¼ yd. Blaw-Knox Handler
2½ yd. Hayward Coal Handler
4 yd. Hayward Coal Handler

BUCKETS - DRAGLINE

⅝ yd. Bay City Type G
¾ yd. Page Type C
1 yd. Page Type C
1¼ yd. Page Type C
2¼ yd. Page Type C

TRACTORS

Allis-Chalmers WSO-64 H.P.
Allis-Chalmers L with Bulldozer "70"
Allis-Chalmers M with Bulldozer "39"
Caterpillar "60" with Bulldozer
Caterpillar "50" Diesel
40 H.P. on Steel Wheels

MISCELLANEOUS

Car-Twin Hopper-Std. Gauge—50 ton
Grader—77 Sr. Austin Western Tandem
Hoists—Single and Double Drum—Gas, Electric and Steam
Mixers—Concrete Building and Paver
Paver—No. 2 Adams Retread
Tank—Water—1200 Gal. on 4 Wheel Trailer
Trailer—50 ton Tandem Deck-Semi—3 Axles—Pneumatics
10—12 ton—Solids
Trenchers—C-10 or 201 Buckeye

"STONE—the CRANE MAN"

R. J. STONE
ED. E. MILLER

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PHONES: RAndolph 6156-4065

RAY S. BETHAM
ED. P. STONE

For Sale—A Good Time to Buy

Tubemill 6x24—Pebblemill 6x48—Kiln 7'x80'
Dryer 7'6" x 75'—Jaw Crusher 23x36—36x48
Gyr. Crusher 7½K-7½D-9K—Rolls 42x16 AA
Pulverizers 24x20-36x18-Locos. Winton Gas 20 ton
Locos. steam 70 ton 6 wh. saddle tank
Loco. crane Orton 22 ton RR steam-Travel. crane 60' 20 ton
Dragline 2T walker gas—Shovel 225B steam 4160 elc.
Cars lo West. air dump 24 yd.—10 K & J 16 yd.
Shovels 50B diesel-125 Mar. Electric 4 yd.

A. V. Konsberg, 8 S. Dearborn St., Chicago

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Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully Guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO., Fort Wayne, Ind.

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Attorney at Law

Patent and Trade-Mark Causes

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Brooks Load Lugger, CH-200, latest model, including 5—2-yd. buckets. $750.00.
Dempster-Dumpster, L-F. 200, latest model, including 5—2-yd. buckets. $750.00.
Goodman Hyd. Electric Mine Shovel, model No. 48.
Portable Gravel Plant, 9x36 Universal, 16"x18" double rolls. 3 ft x 8 ft. Triplex Simplicity Vibr. Screen.

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Limestone Pulverizer Jaybee No. 2, excellent condition.

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CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

FOR SALE

SCREEN, 3'x10' Diamond Triple Deck Vibrating. Condition very good. Ready for immediate shipment.

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

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4 yd. Dragline Bucket, 95% new.
6 Steam Loco. Std. Ga. 25-75 tons.
12 ton Porter Diesel, 36" ga.
3-18-22 ton Steam, 36" ga.
7" Newhouse, 37 TY Crushers.

McCARTNEY MACHINERY CO.
Youngstown, O.

WANTED

13" or 15"x30" Farrell Jaw Crusher
1—3-ft. Symons Cone
1—2-ft. Symons Cone

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Suburban Construction Company
Box 511 Ardmore, Pa.

BULLDOZERS
—For Immediate Delivery—

Cletrac Model 35—Self Starter with Gar Wood Hydraulic Angledozer $1950.00
International-T 40 with Bucyrus Erie Angledozer.... ..... $2250.00
Cletrac Model DGH 60—Self Starter with Gar Wood Hydraulic Builldozer..... $2500.00
All overhauled and ready.
2—14 yard hydraulic, side dump, crawler Athey wagons ..... $600.00 ea.

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FOR SALE: 630 ft. Two-stage stationary air compressor, 16x10x18, belt driven, Laidlaw-Dunn-Gordon (Ingersoll-Rand).

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WANTED

Experienced or qualified sand and gravel plant superintendent. Old established organization. Excellent opportunity. Located west central Ohio. State age, experience, qualifications, salary expected first letter. All applications kept strictly confidential.

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538 South Clark Street, Chicago 5, Illinois

CONVEYOR BELTING FOR SALE
36" wide x 6 ply, 175 ft.
BUCKET ELEVATOR BELT FOR SALE
12" wide belt, 5 ply, 70 ft. 10" buckets attached.
IMMEDIATE DELIVERY

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Jaw Crusher Wanted

Forward All Details To

Homewood Sand and Gravel Company
Blue Island, Ill.
Phone Riverdale 1060

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15 ton, 22'x9' Bonded Motor Truck Scale....$440.00
20 ton, 24'x10' Bonded Motor Truck Scale.... 575.00
3'x6' Bonded Vibrating Screen, Single Deck.. 495.00
Bonded Stoker Coal Crusher..... 345.00

All new—immediate delivery. Also some guaranteed used equipment without priority.

Bonded Scale Co., 110 Bellview, Columbus 7, Ohio

WANTED

18" 24" 30" Belt Conveyor
Also Conveyor Idlers and Bucket Elevators

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WANTED

Quarry foreman—shovel operation—8 men — permanent position — salary and profit sharing.

JERSEY QUARRY COMPANY
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RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Spikes, Frogs, Switches, Tie Plates, and all other Track Accessories.
Most sizes usually available from warehouse stocks. Every effort made to take care of emergency requirements. **Phone, Write or Wire**

L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

WANTED

Gravel crushing and screening plant or gravel crushing and washing plant complete, capacity 50 to 100 tons per hour; also ½ or ¾ yard late model shovel.

RUPP CONSTRUCTION COMPANY
MARSHALLVILLE, OHIO

WANTED TO BUY

A Used Diesel Engine, approximately 150 H. P.—1200 R. P. M.

JOHNSON COAL COMPANY
Morrison, Illinois

FOR SALE

13" x 36" Stevenson Single Roll Crusher.
9" x 36" Wheeling Jaw Crusher.
9" x 15" Phillips Jaw Crusher.
No. 4 Champion Jaw Crusher.
No. 1 Williams Hammermill Crusher.

PITTSBURGH MACHINERY & EQUIPMENT CO.
Aspinwall Pennsylvania

WANTED

Small, Portable Gravel Plant using about 60 H.P. Engine with or without power.

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PHONES: Randolph 6156-4065

WANTED TO BUY:

Besser Vibrapac or Besser Super Automatic Tamper
Concrete Stone and Block Company
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FOR SALE

32" x 12' Revolving Screen. Four years old. Good condition.

Priced for quick sale.

Calcar Quarries, Paoli, Indiana

Operator Wanted

With Dredge Pump Equipment to operate Sand Pit in Illinois. Must be thoroughly familiar with this type of work. Permanent. Reply stating equipment available, experience, etc. Box 105.

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WANTED

DORCO TWELVE FOOT SAND WASHER — ADVISE PRICE, LOCATION AND CONDITION.

LOGAN ENGINEERING CO.
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DEWATERING ELEVATOR

35½ ft. centers—inclined at 60°—bucket speed 66 feet per minute — structure all steel construction — 200 tons per hour.

KICKAPOO SAND & GRAVEL CO.
Box 112, Peru, Indiana

WANTED

Good 60" x 15' locomotive type boiler complete. Approximately 900 sq. ft. heating surface.

Built A. S. M. E. Code

NATIONAL LIME & STONE CO.
Findlay, Ohio

WANTED

Quarry Foreman, also Shovel operator for permanent positions in Middle West.

Box 235

538 So. Clark St. Chicago 5, Ill.

We Offer for Sale

One 12" Traylor Bulldog Crusher, Fitted for Medium Fine Reduction, Complete C. S. & 12" x 36" Pulley $1275.00.

One 3' x 8' Telsmith D. D. Screen, 220 Motor, Drives, ⅛" & ¼" Cloth & Spare Deck, Complete $500.00.

Both units in good condition.

SULLIVAN HIGHWAY PRODUCTS CORPORATION
Summitville, New York

Jaw Crushers; Universal, 10x20 & 15x36".
Farrell, 13x30, 18x36, 24x36". Buchanan 12x36".
Good Roads 10x40 & 22x50". Acme 36x48".
Telsmith 36" Gyrosphere, rebuilt Gtd.
Bucyrus Class 14 Steam Dragline 65' boom.
Diesel Engines, 85 HP Bessemer, 120 HP Busch Sulzer, 125 HP Venn Severin, rebuilt Gtd.
Fairbanks M 25 to 300 HP.
Natural Gas Engines; 100 HP Superior 130 HP Reeves, 150 HP Bessemer, 170 HP Winton (Gen. Motors).
Gasoline Shovels; ⅝ and ½ yard Insley Type C
50-B Bucyrus Steam. Various others 1 to 2½ yard.
Air Compressors; 250 CFM Sullivan belt drive, 160
Elevators, Screens, Conveyors, motors, etc.

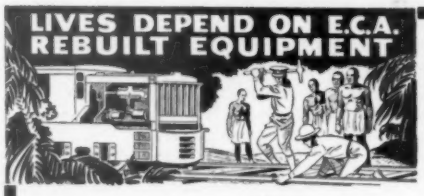
MID-CONTINENT EQUIPMENT CO.
Pa 2290 — 710 Eastgate — St. Louis 5, Mo.

FOR SALE
NEW AND USED STEEL
Structural
Plates
Sheets
Storage Tanks
Rails — Cars — Locomotives
HYMAN-MICHAELS CO.
122 S. Michigan Avenue
Chicago, Ill.

1¼-yard Link Belt dragline, gas, 45' boom.
30-ton Browning #3 steam loco. crane
2-yard Orton clamshall bucket
¾-yard Williams clamshell bucket, rehandling.
1¼-yard Marion type 460, Electric Dragline
24 x 39 Single Roll Crusher
Hoist, double drum—tail rope haulage type with 60 H.P. motor
8-ton Vulcan Gas Loco. std. ga.

ALLSTATES EQUIPMENT CO.
343 S. Dearborn — Chicago 4, Ill.
Phone: Harrison 1821

FOR SALE — BARGAIN
SLIGHTLY DAMAGED
WELDING RODS
(ELECTRODES)
E. Cohn & Sons
CEDAR RAPIDS, IOWA



3—Equipment Corp. of America Rebuilt Locomotives helped build the "GUADALCANAL, BOUGAINVILLE AND TOKYO RAILROAD." They were at the scene when the golden spike was driven to complete the line and are hauling supplies to save our men and exterminate the Japs.

LOCOMOTIVE CRANE
1—15-ton Bucyrus Erie locomotive crane, Serial No. 233, with 40' boom, steam powered. Equipped with air brakes. Thoroughly REBUILT. Cap. at a 12' radius and a 2 part line, 30,000 lbs. Boiler vertical size 54"x7'6". Shipping wt. 87,500 lbs.

AIR COMPRESSORS
Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

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5—Material bins; 1—150-ton Blaw-Knox, 1—102-ton Erie 3 comp., 1—60-ton Heltzel, 1—51-ton Blaw-Knox, 1—44 cu. yd. Johnson. All 2 comp. steel bins with weigh batchers.

CRANES AND SHOVELS
1—1¼ yd. Link Belt Model K42 crawler crane, Serial No. 1265, with 40' boom, gasoline powered, and pull shovel attachment.
1—1¼ yd. Erie gas air Model GA2, Serial No. 9758, with 45' boom and shovel attachment.
2—1 yd. Northwest No. 4, Serial Nos. 3441, 3493, 60' booms.
3—¾ yd. Koehring cranes, Model 301, with 45' boom, Serial Nos. 544, 772 and 840. Gasoline powered.
1—¾ yd. P & H Model 400 crawler crane, Serial No. 4136, with 40' boom gasoline powered.
1—½ yd. P & H shovel Model No. 204, Serial No. 2303, gasoline powered.
1—½ yd. Northwest No. 2, Serial No. 2908, comb. crane and shovel.
1—¾ yd. Erie Model B2 crawler crane, steam powered, Serial No. 4027, with 50' boom and shovel attachment.

CRUSHERS
1—No. 4 Champion jaw crusher, size 9x15", Serial No. 2606.
1—No. 2 Climax jaw crusher, size 9x16".
1—Buchanan jaw crusher, size 10x16".
1—Acme jaw crusher, Ser. No. 1873, size 12x20".
1—Acme jaw crusher, Ser. No. 1686, size 9x16".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—Allis Chalmers, No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening" 12x35½".

DERRICKS
2—Steel Guy Derricks: 1—5-ton Terry Guy Derrick, 70' mast, 60' boom; 1—5-ton Insley, 75' mast, 80' boom. Stiff leg derricks: 1—25-ton Hunter, 40' mast, 80' boom; 1—2-ton Pittsburgh, 26' boom, 15' mast. Also a number of wood stiff leg derricks, 1 to 5-ton cap.

HOISTS (Elec., Gas, Steam)
85—Electric, ranging from 20 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes (38 in stock).
Steam, ranging from 8 H.P. to 60 H.P., single, double and triple-drum; all standard makes.

PUMPS (Dredging)
1—10" Morris sand pump, Ser. No. 86864, cap. 87 cu. yds. per hr.
1—8" Cataract dredging pump, Ser. No. 175895, cap. 2000 GPM @ 53' head.
1—8" Morris cent. sand pump, cap. 60 cu. yds. per hr.

PNEU. TOOLS
A large quantity of Jack hammer drills, column tripod and derrick drills.

SHARPENERS (Bits)
1—Size J3 Ingersoll Rand bit sharpener No. 1626, for rock drill bits, power 3 H.P. G.E. electric motor, 220/440 volt, 60 cyl., 3 ph.
1—Sullivan drill steel sharpener, Class A No. 556, air operated. Max. 1½" round steel.

PARTIAL LIST ONLY — SEND FOR 48 PAGE STOCK LIST

All this equipment is owned by us and may be inspected at one of our plants. WE BUY—REBUILD, SELL AND RENT.

CHICAGO — 1160 S. Washtenaw Ave.
PHILADELPHIA — 1513 Race St.
PITTSBURGH — P. O. Box 933 Dept. PQ
NEW YORK — 30 Church St. Dept. PQ

EQUIPMENT CORPORATION of AMERICA

DREDGE FOR SALE

J. B. & J. W. Roberts
Box 34 — Richmond, Va.

FOR SALE
One (1) 36 x 6 Farrel Jaw Crusher Shop No. 11819 in good usable condition — location Morris Plains, N. J. For particulars address inquiries to:
C. C. SPENCER, Purchase Manager
Morris County Crushed Stone Co.
10 Park Place — Morristown, N. J.

FOR SALE
ROTARY CUTTER HEAD
for 10 or 12 inch dredge. Complete with drives and heel castings. Like new.
OSCAR LINN
Canton — Illinois

1—18 Ton Plymouth Standard Gauge
GASOLINE LOCOMOTIVE
Type 2—Model JLC. Equipped with Blue Streak Climax Model RI-6 Engine. 6 Cylinders—6" Bore—7" Stroke. First Class Condition. Immediate Delivery.
B. M. WEISS COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.

DEPENDABLE USED MACHINES
Bay City ¾ yd. shovel
22 x 50 portable conveyor
Johnson 75 ton steel bin
Day hammermill with elevator
Haiss No. 80 loader, rebuilt
Link Belt sand cone
Ingersoll Rand 110 ft. compressor
TRACTOR & EQUIPMENT CO.
3506 W. 51st St. — Chicago, Ill.

PRICED FOR QUICK SALE
1—Allis-Chalmers Blake Type Jaw Crusher 10"x20" $800.00
LIPPMANN ENGINEERING WORKS
4008 West Mitchell St. — Milwaukee, Wis.

FOR SALE
STONE BUCKETS
7' wide—10' long—28" high
Each bucket has 4 eyelets and one open end. Buckets are reinforced with 60-lb. rails and weigh 3300 lb. ea.
APEX IRON & METAL CO.
2204 S. Laflin St., Chicago, Ill.

MACHINERY and EQUIPMENT
For QUICK Sale

1—Derrick (wood) 70′ Mast—70′ Boom with caps, fittings, etc., and bull wheel—3 double blocks—3 single blocks for above.
2250′ 1¼″ Wire Rope (used in 9 guy wires)
700′ ⅝″ Wire Rope (hoist)
390′ ⅞″ Wire Rope (hoist)

1—Derrick (wood) 45′ mast—35′ boom with caps, etc. 2 double blocks—2 single blocks.
800′ 1¼″ wire rope (used in 8 guy wires)
450′ ⅝″ wire rope (hoist)

1—Double drum hoist, belt connected to 40 H.P. Waukesha hoisting motor—installation mounted on skids for portability.

1—Ingersoll Rand Portable Air Compressor direct connected to 4 cyl. Waukesha motor.
160′ 1½″ galvanized iron pipe for air line.
80′ 1¼″ galvanized iron pipe for air line.

1—Rex centrifugal pump with Wisconsin motor (self-priming).

1—3″ Centrifugal Pump, powered by Ford V-8 motor.
25′ 5″ galv. iron pipe.
200′ 4″ galv. iron pipe.
90′ 3″ galv. iron pipe.

1—No. 45 lb. Jack hammer with 50′ ¾″ rubber hose.

4—Steel buckets for hoisting ore out of quarry.

1—Dynamite House

1—Tool House

Miscellaneous small tools, etc., approx. as follows:

18 prs. Goggles
2 Axes
3 Picks
3 Sledge Hammers
1 Shop Hammer
3 Pipe Wrenches
1 Cross Cut Saw
1 Hand Saw
12 Shovels
72 Drill Bits
1—9′ Drill Steel
1—6′ Drill Steel
2—5′ Drill Steel
1—4′ Drill Steel
1—3′ Drill Steel
2—2′ Drill Steel
3 Gallons Jack Hammer Oil
1—Level
1—Square

Miscellaneous lot office equipment approx. as follows:

1—only Royal Typewriter
1—only Filing Cabinet
1—only Storage Cabinet
1—only Gas Stove

For further information regarding this equipment, write, wire or phone S. E. Chesnut, local representative Meramec Minerals, Inc., Llano, Texas; or Meramec Minerals, Inc., 723 Hanna Building, Cleveland, Ohio.

1—25 Ton Steel Stiff Leg Derrick, 70 ft. boom, 50 ft. mast, 2 drum Hoist.
1—20 Ton capacity Steel Stiff Leg Derrick, with 60′ Boom and 49′ Mast.
1—170 KVA Motor Generator with F. M. 228 HP Diesel engine for 220/3/60 AC.
1—1¼ Yd. P & H 600 Caterpillar Gas Shovel.
1—30 Ton Cap. Brownhoist Steam Locomotive Crane with 45′ Boom, Code Boiler. Splendid operating condition.
1—15 Ton Brownhoist Steam Loc. Crane 47 ft. boom.
1—15 Ton Brownhoist Steam Loc. gas operated with 2 booms.
1—2½ Yd. Diesel Dragline Caterpillar Crane with 60′ Boom.
1—1 Yd. Marion Electric Shovel with Cummins Diesel Engine.
1—8 Ton Plymouth Gas Locomotive 36″ Gauge Climax Engine.
2—1 Yd. 4 Blade Orange Peel Buckets.
1—¾ Yd. 3 Blade Orange Peel Bucket.
2—Appleton Air Hose Reels, like new.
1—1 Yd. Hayward Electric Clam Shell Bucket, 220 D. C.
1—No. 7½ McCully Gyratory Crusher.
1—8 Ton Morgan Single Drum Mine Hoist with 400 HP AC Motor.
1—Columbia Scrubber Screen.
1—Symons 36″ Disc Crusher.
1—11x22—No. 10A Acme Jaw Crusher.
1—No. 4 Austin Gyratory Crusher.
1—12″ H & B Flap Valve.
1—No. 3 Williams Swing Hammermill.
10—12″ & 16″ American Wire Rope Sheaves.

Hawkins & Company
Phone—Harrison 0725
124 So. Michigan Ave., Chicago, Ill.

MISCELLANEOUS

Davenport standard gauge 10 ton locomotive
Whitcomb 36″ gauge 8 ton locomotive
Mercury 1½ ton 30″ gauge Edison battery locomotive
Sprague Electric car puller, 6 ton, D.C.
Car puller, cargo type, 440 V, 25 cycle, 15 hp motor
V shape end dump, 36″ gauge steel car
Flat cars for 18″ and 24″ gauge
Morris 6″ sand pump, with 75 hp motor
Electric & Gasoline driven water pumps
Schramm 4 cyl. air compressor, 60 hp AC motor
C-P air compressor, 529′, 100 hp slip ring motor
2 Meyer circ. stone saws & 3 Lincoln planers
New York Air Brake 6B steam duplex air compressor

CRUSHERS, ROLLS, MILLS

Jaw crushers—9″x16″, two 11″x20″, 18″x32″
Traylor 11″ "BULLDOG" gyratory crusher on wheels
Robins double roll coal crusher, 24″x30″
Stevenson single roll crusher, 24″x39″
Single roll crusher, 24″x24″ with knobs
Simplex Coal Pulverizer, type 33A
American Standard disintegrator, 24″x18″x30″
Sturtevant No. 0 Rotary Fine crusher
Williams No. 2 "SEMI-VULCANITE" hammer mill

SCREENS, WASHERS, CLASSIFIERS

Niagara double deck vibrating screen, 2′x10′
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Hummer vibrating screens, 1 & 2 deck, 3′x5′ & 4′x5′
Tyler generators for "HUMMER" screens
New "TONCAP" framed screens, 3′x5′ & 4′x5′
Revolving screens, 42″x18′, 4′x16′, 5′x20′
Sand drag washer, 36″x20′

BUCKET ELEVATORS

55′ continues elevator, 14″ buckets on belt
35′ continues elevator, 30″ buckets, 2 strand chain
35′ enclosed elevator with 6″ buckets
50′ centrifugal elevator, 16″ buckets on chain
40′ centrifugal elevator, 18″ buckets on belt
52′ centrifugal elevator, new 20″ buckets on 9 ply belt
Used 6 ply 20″ elevator belt
Gears, sprockets, elevating and driving chain
New K2 and couplings for C102½ and C188 chain

CONVEYORS

36″x175′ trough belt conveyor
14″x100′ Trough belt conveyor
Belt idlers and conveyor pulleys
400′ of 6 ply 36″ belt with ⅛″ top
500′ of 6 ply 14″ conveyor belt with ⅛″ top
185′ of 42″ 8 ply belt conveyor with ⅛″ top
12″ and 15″ single strand flight conveyors
Robins Automatic belt trippers for 14″ belt
Hand propelled trippers for 24″ and 30″ belt
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Jeffrey Foundry Mold conveyor, 42″x150′
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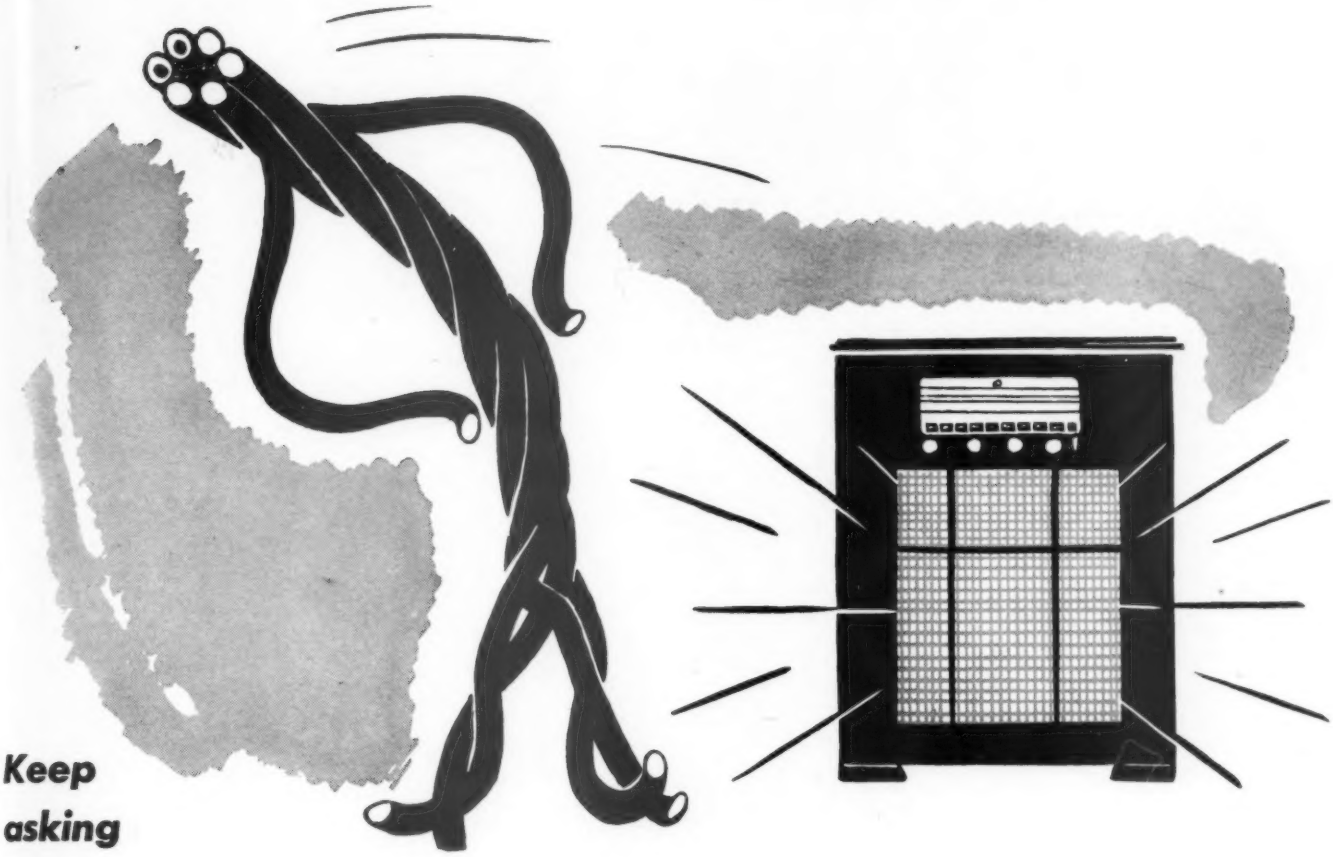

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